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VOL. XIX. NO. 8. APRIL 15, 1891.

PEACE ON EARTH & GOOD WILL TOWARD MEN

GLEANINGS IN BEE CULTURE

DEVOTED TO BEES & HONEY & HOME INTERESTS.

MEDINA, OHIO.
BY
A. I. ROOT.

S. W. Conrad

TERMS, ONE DOLLAR PER YEAR.

GLEANINGS IN BEE CULTURE.

ESTABLISHED IN 1873.

DEVOTED TO BEES, HONEY, & HOME INTERESTS

PUBLISHED SEMI-MONTHLY BY

A. I. ROOT, - MEDINA, O.

A. I. ROOT, EDITOR.

ERNEST R. ROOT, - - ASSOCIATE EDITOR.

J. T. CALVERT, BUSINESS MANAGER.

Terms. $1.00 per annum; two years, $1.80; three years, $2.50; five years, $3.75, *in advance;* or two copies to one address, $1.80; three copies, $2.50; five copies, $3.75. These terms apply both to the United States, Canada, and Mexico. To all other countries in the Universal Postal Union, 18 cents per year extra for postage. To all countries out of the U. P. U., 42 cents per annum extra.

Discontinuances. The journal is sent until orders are received for its discontinuance. We give due notice when the subscription expires, and further notice if the first is not heeded. Any subscriber whose subscription has expired, wishing his journal discontinued, will please drop us a card at once; otherwise we shall assume that he wishes his journal continued, and will pay for it soon. If you wish your journal discontinued at the end of the time paid for, specify that fact in ordering, and your wishes will be respected.

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Receipts for Money. We send no receipt for subscription money. The change of the date on the little label shows you that the money has been duly received, and credited. During December and January it sometimes takes us three or four weeks before the date is changed.

How to Send Money. You can send money at our risk by P. O. order, express money-order, or bank check or draft, and where none of these means are available, by registered letter Money sent in any other way is at your risk. We pay no exchange or express charges on money. Be sure to sign your express money-order, or indorse your check or draft, if not made payable to order of A. I. Root. If you neglect this it will have to be sent back to you.

Rates of Advertising. On not less than 5 lines, per single insertion, and for a uniform space each issue, our rates per nonpareil line are as follows:

TIME RATES.

1 to 2 insertions, per line	20c
3 to 5 " " "	19c
6 to 11 " " "	18c
12 to 17 " " "	17c
18 to 23 " " "	16c
24 insertions " "	15c

On from 3 to 7 inches space, 1c per line *less* than above rates.

On 8 inches or more, 2c per line *less*.

On less than 5 lines space, 1c per line more than above rates.

SPACE RATES.

There are those who would like the privilege of lengthening or shortening their ad., according to the season; i. e., large display advertisements, during the busy rush, and small ads. during the dull season. We append a table of "space rates," but it should be understood that the discounts are not quite as liberal as the "time rates" above. We will sell space, to be taken out any time within a year, to be used at the option of the buyer, at the following rates:

100 lines	$ 19.00
200 lines	37.00
500 lines	85.00
750 lines	125.00
1000 lines	163.00

In contracting for advertising, be sure to specify whether you wish *time* or *space* rates.

For electrotyped advertisements we will allow an additional discount of 5 per cent on both time and space rates.

A. I. ROOT, Medina, O.

CLUBBING LIST.

We will send GLEANINGS with—		
The American Bee Journal, weekly,	($1.00)	$1.75
The Canadian Bee Journal, weekly,	(.75)	1 65
The Bee-Keepers' Review,	(1.00)	1.75
The British Bee Journal.	(1.50)	2.00
American Apiculturist,	(.75)	1.70
American Bee-Keeper,	(.50)	1.40
All of the above journals,		5.65
American Agriculturist,	($1.50)	2.25
American Garden,	(2.00)	2 60
Prairie Farmer,	(1.50)	2 35
Rural New-Yorker,	(2.00)	2.90
Farm Journal,	(.50)	1.20
Scientific American,	(3.00)	3.75
Ohio Farmer,	(1.00)	1.90
Popular Gardening,	(1.00)	1.85
U. S. Official Postal Guide,	(1.50)	2.25
Sunday-School Times, weekly,	(1.50)	1.75
Drainage and Farm Journal,	(1.00)	1.75
Fanciers' Monthly,	(1.00)	1.75
Illustrated Home Journal,	(.50)	1.35
Orchard and Garden,	(.50)	1.40

[*Above Rates include all Postage in U. S. and Canada.*]

IMPORTED ITALIAN QUEENS.
W. C. FRAZIER, ATLANTIC, IOWA.
7-17db Please mention this paper.

MUTH'S
Honey - Extractor.
Square Glass Honey-Jars,
Tin Buckets, Bee-Hives
Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.
APPLY TO
CHAS. F. MUTH & SON, Cincinnati, O.
P. S.—Send 10-ct. stamp for "Practical Hints to Bee-keepers."
Please mention this paper.

75 Fine Tested Italian and Albino
Queens For Sale at $1.75 Each.
Select tested golden Italian queens, $2.50 each. Select tested Albinos, $2.00 each. First come first served. Untested by April 15, $1.00 each, or 6 for $5.00, or 12 for $9.00. Orders booked now, and pay for queens when received. I guarantee safe delivery and satisfaction on every queen by mail. Thanks for last year's patronage.
4-8db J. W. TAYLOR, Ozan, Ark.
☞In responding to this advertisement mention GLEANINGS

FOUNDATION & SECTIONS are my specialties. No. 1 V-groove Sections at $3.00 per 1000. Special Prices to dealers. Send for free price list of every thing needed in the apiary. M. H. HUNT,
1tfdb Bell Branch, Mich.
☞In responding to this advertisement mention GLEANINGS.

LEATHER-COLORED
PRICE LIST FREE ON APPLICATION.
A. E. MANUM, - - BRISTOL, VT.
ITALIAN QUEENS.
Please mention this paper. 7-14db

COMB FOUNDATION

ADVANCED

3 cts. a lb., Wholesale and Retail,

AFTER THIS DATE, APRIL 15,

By Chas. Dadant & Son, Hamilton, Ill.,
A. I. Root, Medina, Ohio.

All kinds of **PRINTING.** *250 FOR $1. DELIVERED.* Noteheads, Billheads, Envelopes, and Cards. Shipping-tags, $1.50 per M. Bee-keepers' work a specialty. GOOD WORK. Send copy and money to E. EUGENE ARTER, HOOPESTON, ILL.
Please mention this paper.

A PAYING CROP.

Grow Popping-Corn. We bought 50 carloads last season, paying from 2½ to 3½ cts. per pound on the ear. 6-7-8-9d

Will Want 100 Carloads Next Season.

Write us, and on receipt of stamps will advise you as to best yielding variety to plant and pop.

H. R. WRIGHT, 326 Broadway,
Albany, N. Y.

Reference: Albany County Bank.
Please mention this paper.

FOR SALE.—Eggs of Golden Wyandottes, $2.00 per 13. Silvers, $1.00 per 13. Japanese buckwheat, 90c per bushel. Sacks free. 7-10 db
P. F. RHODES, New Castle, Ind.

For Sale—Hybrid Bees.

25 GOOD COLONIES in shipping-cases, with 9 S. frames, $3.00 each. Also 25 Chaff hives at $1.00 each. Delivered at R. R. station any time after May 1. Reference, A. I. Root. 7tfdb
MABEL A. FENN, Tallmadge, Ohio.
Please mention this paper.

FOR SALE CHEAP.

100 COLONIES OF BEES FOR MAY DELIVERY.

Write for prices, stating number wanted. 8d

GEO. E. HILTON,
FREMONT, MICH.
☞In responding to this advertisement mention GLEANINGS.

Queens! Queens! Queens!

If you want bees that will beat any thing you ever saw in every respect, try our strain of Italians. Warranted queens, each, $1.00; six, $4.50. 8-9-10d

ORDER NOW, PAY UPON ARRIVAL.

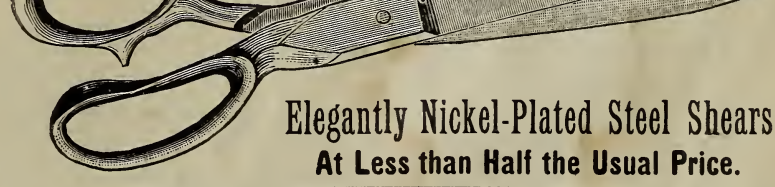
JAS. & F. B. YOCKEY,
NORTH WASHINGTON, WESTM'D CO., PA.
☞In responding to this advertisement [illegible]

ROOT'S
Household Repairing
OUTFIT.

A combination of tried, practical, common-sense tools and materials that will enable any one with ingenuity enough to nail on a fence-board to do his own half-soling, boot, shoe, rubber, and harness repairing. No pegs are used—simply wire clinch nails. Saves time, trouble, and expense. Entire outfit neatly boxed, only $2. Hustling agents wanted everywhere. Send for circular to

ROOT BROS.,
Medina, Ohio.
Mention GLEANINGS.

NICKEL-PLATED "LEADER" SHEARS.



Elegantly Nickel-Plated Steel Shears
At Less than Half the Usual Price.

TABLE OF PRICES.

Postage.	Name and size.	Prices—Each.	½ doz.	3 doz.
5	6 inch nickel Leader Shears	$ 20	$1 10	$ 6 00
5	6½ " " " "	25	1 25	7 00
5	7 " " " "	30	1 40	8 00
5	7½ " " " "	35	1 60	9 00
5	8 " " " "	40	1 80	10 00
6	8½ " " " "	45	2 00	11 00
7	9 " " " "	50	2 25	12 00

About two years ago we bought 150 dozen of above shears, and they have gone off like "hot cakes"—so much so that we have just bought another lot of 350 dozen, which are, if any thing, nicer than the other lot, most of which are gone. The others pleased so well that we got repeated and increased orders from the same parties. Neighbors of those who were fortunate enough to get a pair, on seeing them and learning the price, wanted a pair, and so the orders kept repeating themselves. We are always glad to give our customers a bargain which gives more than satisfaction, and this is one of them. You will see we have made special prices in quantities, and no doubt some of you can do a good thing for yourselves, as well as your neighbors, in getting a quantity and introducing them. They are put up ½ dozen in a box, and we can not assort ½ dozen; but we can give you larger lots assorted, ½ dozen of a kind.

A. I. ROOT, Medina, O.

IT WILL PAY YOU

To Send for my Illustrated Catalogue of

APIARIAN SUPPLIES

Before placing your orders. I have a lot of very nice No. 2 sections at $2.00 per 1000.

J. C. SAYLES, HARTFORD, WISCONSIN.

8tfdb Please mention this paper.

CANADA.

Canadian Bee-Keepers will find it to their interest to purchase

HIVES, SECTIONS, APIARIAN SUPPLIES,

—FROM—

T. PHILLIPS & CO., Orillia, Ont.

Circular sent, with description of our improved crate, on application. 6d

In writing advertisers please mention this paper.

ITALIANS

Tested queen, $1.50; Untested, $1.00. Nuclei, brood, and bees by the lb. Send for price list.

MRS. A. M. KNEELAND,
Box 77. Mulberry Grove, Bond Co., Ill.

NO DISAPPOINTMENT.

Orders booked now for May delivery, or sent without delay. Suit yourself. Italian queens only. Tested, $2.00; untested, $1.00 each; 12 for $9.00. Bees cheap. Send for price list. Make P. O. money orders payable at Clifton. We GUARANTEE safe arrival always.

4tfdb COLWICK & COLWICK, NORSE, BOSQUE CO., TEX.

Please mention this paper. 7d

Kind ✣ Friends.

I will have nice untested Italian queens ready to mail by April 15; $1.00 each. After April, 75 cents. Situated as I am, out on the prairie, my breeding-yards are kept at a safe distance. Ten per cent discount on 5 or more lbs. of bees after April 15. See advertisement in another place.

JENNIE ATCHLEY, Farmersville, Texas.

In writing to advertisers please mention this paper.

BEE-KEEPERS

Send for my illustrated Catalogue of Bee-Keepers' Supplies. Prices reasonable.

F. W. LAMM,
Box 106, Somerville, Butler Co., O.

3-8db Please mention this paper.

READY TO MAIL, TESTED ITALIAN QUEENS.

Reared last Aug., $1.75; after March, $1.50. Untested, from Doolittle's Select Mother, raised by his method, $1.00. Reduction on 3 or more. Orders booked now; pay when queens are wanted. 6-7-8d

JOHN B. CASE, Port Orange, Vol. Co., Fla.

☞In responding to this

BEES FOR SALE.

COLONIES, NUCLEI, and QUEENS

at living rates. Send for circular and price list to

C. C. VAUGHN,
Columbia, Tenn. 6tfdb

☞In responding to this advertisement mention GLEANINGS.

Printing,

Note Heads, Bill Heads, Envelopes, Business Cards 250 for $1.00 Post Paid. Good honest work and paper. 50 Ladies Cards in Steel Plate Script 25 c. No Samples. 12 Years in Business. Send Copy and dollar to

BURTON L. SAGE, New Haven, - Conn.

☞In responding to this advertisement mention GLEANINGS.

HONEY COLUMN.

CITY MARKETS.

KANSAS CITY.—*Honey.*—No particular change to note, either in comb or extracted. Sales are slow for both grades. We quote 1-lb. comb, white, 16@18c; dark, 12@14c; 2-lb., white, 14@15c; dark, 11@12. Extracted, 6@7c. *Beeswax.*—None in market.

April 8. CLEMENS, MASON & CO., Kansas City, Mo.

DETROIT.—*Honey.*—Comb honey is selling in a small way at 15@16c for fair lots; dark and unattractive very slow of sale. Extracted, 7@8c. *Beeswax* firm at 28@29c.

Bell Branch, Mich., Apr. 9. M. H. HUNT.

ALBANY.—*Honey.*—We are almost out of comb honey. Received one small consignment to-day, but had orders in advance for the whole lot. No change in prices. Extracted honey in good demand, especially buckwheat, at 7c; light, 8@9c.

Apr. 9. CHAS. MCCULLOCH & CO., Albany, N. Y.

SAN FRANCISCO.—*Honey.*—Extracted honey in some demand for Europe and the East, at 5¾@6¼c. Comb honey scarce; 1-lb., 13@15; 2-lb., 11@13. *Beeswax.*—No stock. SCHACHT, LEMCKE & STEINER,

Mar. 23. San Francisco, Cal.

CHICAGO.—*Honey*—Very little comb honey being offered, and any thing nice brings 18c. Extracted quiet at 7@8c. *Beeswax*, 27c. Seldom been less honey on market at this season. R. A. BURNETT,

Apr. 7. Chicago, Ill.

ST. LOUIS.—*Honey.*—Choice white-clover honey in comb, 1-lb. sections, 15c; good fair stock, 14c; off stock, 12@13c. Extracted white clover, small cans, 5 to 10 lbs., 8c; 60-lb. cans, 7½c. The lower price on sugar will affect low-grade honey. *Beeswax*, prime, 27c. W. B. WESTCOTT & CO.,

Apr. 1. St. Louis, Mo.

ST. LOUIS.—*Honey.*—Market quiet; comb at unchanged quotations. There is considerable inquiry for strained in barrels, which, if in stock, would bring 6½@6¾c. Prime *beeswax*, 27½c.

D. G. TUTT GROCER CO.,

Apr. 8. St. Louis, Mo.

CINCINNATI.—*Honey.*—Demand for honey has been good of late. The market is almost bare of choice comb honey, which sells at 14@16c in the jobbing way. There is a good demand for extracted honey at 6@8c on arrival. Demand for *beeswax* is good at 25@3 c a lb. on arrival for good to choice yellow.

Cincinnati, Apr. 9. CHAS. F. MUTH & SON.

FOR SALE.—500 lbs. extracted white-clover honey; price 9c per lb. It is in double screw-topped 60-lb. tin cans. Write for sample.

8d M. W. HARRINGTON, Williamsburgh, Ia.

FOR SALE.—"Choice orange-blossom" extracted honey in 60-lb. tin cans, or kegs holding 14 to 15 gallons. Price $1.25 per gallon, f. o. b. cars here.

ARTHUR F. BROWN,

6 9db Huntington, Putnam Co., Fla.

DO YOU KNOW

that you can buy a good hive for 55 cts., 100 brood-frames for $1.00? Nice foundation cheap. Smokers and feeders, and every thing you need. You can save money by sending an order. Special terms to dealers. 8-9-10d

W. H. Bright, Mazeppa, Minn.

Please mention this paper.

SILVER LACED Wyandottes, the best strain of fowls in the country. Eggs for hatching, only 75 cts. per setting of 13; two settings, $1.25. Also choice Japanese buckwheat, $1.00 per bushel.

8d W. J. HILLMAN, Green River, Vt.

☞In responding to this advertisement mention GLEANINGS.

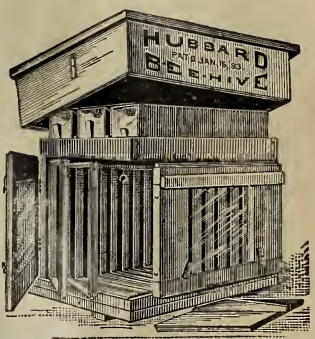
HUBBARD SECTION PRESS,
HUBBARD BEE HIVE,

Folding Sections a Pleasure.

And other Apiarian Supplies.
Send for descriptive circular,

C. K. HUBBARD,
Fort Wayne, Ind.

This Section Press (Pat. June 17, 1890) is far in advance of anything else of the kind on the market. It is practically automatic. Both hands can be used to handle the sections, and a slight forward push forces together the dovetailing, thus completing the sections with marvelous rapidity. Price $2.50. Ask your supply dealer for it. Supply dealers, send for wholesale prices.



The HUBBARD HIVE has been in use 8 years, and has stood the test nobly. Trade has been constantly growing, owing to the excellent satisfaction it gives. If you are ever annoyed by the scraping and breaking of combs; killing bees when setting a frame to one side or hanging it in the hive; sagging at the bottom and getting waxed fast; shaking about when moving a hive; in short, if you dislike to pry and wrench your frames, break combs and kill bees while handling them you will be pleased with this hive.

The Man Who is Willing to Work can make money fast selling these hives. **$5.00 to $10.00 often made at it in a day.** Send for Circular.

SECTIONS, SMOKERS, DADANT'S COMB FOUNDATION, ETC.

15c, For revised "1st Principles in Bee Culture," 104 pages—the *largest and best work of the kind for the price.* First 68 pages contain no advertisements, but are filled with such practical information as how to divide, transfer, introduce Queens, feed, unite, stop robbing, raise honey, etc. The book receives many compliments. If you do not like it, return it and get your money.

☞In responding to this advertisement mention GLEANINGS. 5-6 7-8-9-11d

NOW, FRIENDS, LOOK HERE!

I sell the Nonpareil Bee-Hive, White Poplar Sections, Italian Bees and Queens. Price List free. Write for one. 8tfdb

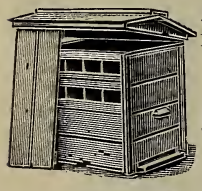
A. A. BYARD, West Chesterfield, N. H.

☞In responding to this advertisement mention GLEANINGS.

TAKE NOTICE!

BEFORE placing your orders for SUPPLIES, write for prices on One-Piece Basswood Sections, Bee-Hives, Shipping-Crates, Frames, Foundation, Smokers, etc. PAGE, KEITH & SCHMIDT CO.,
21-12db New London, Wis.

☞In responding to this advertisement mention GLEANINGS.



DOWN THEY GO!

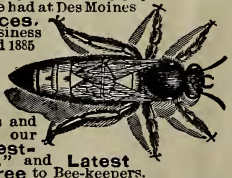
For the next few days $1.25 will buy our 8-frame chaff hive, with 2 T supers and 8 heavy top-bar brood-frames.

Send for PRICE LIST.

ROE & KIRKPATRICK,
Union City, Ind.

1tfdb Please mention this paper.

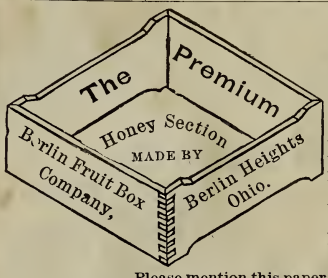
Western Bee-Keepers' Supply House



Root's Goods can be had at Des Moines Iowa, at **Root's Prices.** The largest supply business in the West. Established 1885 Dovetailed Hives, Sections, Foundation, Extractors, Smokers, Veils, Crates, Feeders, Clover Seeds, etc. Imported Italian Queens. Queens and Bees. Sample copy of our Bee Journal, **"The Western Bee-Keeper,"** and **Latest Catalogue** mailed **Free** to Bee-keepers.

JOSEPH NYSEWANDER, DES MOINES, IOWA.

3tfdb



ONE-PIECE
SECTIONS,
both No. 1 & 2; WOOD SEPARATORS and other bee-supplies. Also BERRY-CRATES, BASKETS and BOXES, made up or in flat. Send for catalogue. Address as in cut.

Please mention this paper. 5-10db

QUEENS, QUEENS.

COLDEN CARNIOLAN AND ITALIANS.
Price List Free.
H. ALLEY, Wenham, Essex Co., Mass.
Please mention this paper. 6tfd

Gentle · Carniolans.

To reduce my stock I will sell 50 colonies of Carniolan bees. All with carefully bred, prolific young queens. Prices reasonable.
5-8db **T. E. TURNER,** Templeton, Wis.

SECTIONS! SECTIONS! SECTIONS!

On and after Feb. 1, 1890, we will sell our No. 1 V-groove sections, in lots of 500, as follows: Less than 2000, $3.50 per 1000; 2000 to 5000, $3.00 per 1000. Write for special prices on larger quantities. No. 2 sections at $2.00 per 1000. Send for price list on hives, foundation, cases, etc.

J. STAUFFER & SONS,
16-tfdb Successors to B. J. Miller & Co.,
Nappanee, Ind.

In writing advertisers please mention this paper.

Advanced Bee Culture;

ITS METHODS AND MANAGEMENT. I am now engaged in writing and printing a book that is to bear this title. It is to take the place of my other book, *The Production of Comb Honey*, which will not be re-published. Although the new book will contain at least five or six times as much matter as *The Production of Comb Honey*, yet the price will be only 50 cts. The book is already partly printed, and will probably be out some time in April or May. If any of the friends would like to "help me along" in meeting the expenses of getting out the book, they can do so by sending their orders in advance. Such orders will be most thankfully received, and filled the *very day* the book is out. I will send the REVIEW one year and the book for $1.25. The REVIEW will be sent on receipt of order (I have plenty of back numbers to send it from the beginning of the year), and the book as soon as it is out. Stamps taken, either U. S. or Canadian. 10tfdb

W. Z. HUTCHINSON, Flint, Mich.

☞In responding to this advertisement mention GLEANINGS.

Leahy M'f'g Co.,

—UNDOUBTEDLY THE—

LARGEST PLANT IN THE WEST,

Built exclusively for the manufacture of Apiarian Supplies. **One and One-Half Acres Floor Space.** We sell as **Cheap as the Cheapest**, and our goods are as **Good as the Best.** Parties will do well to write us for estimates on large orders. We will send you our catalogue for your name on a postal card. Address **LEAHY MFG. CO.,**
7tfdb **Higginsville, Mo.**

Please mention this paper.

$5.00 IN MAY, AND $4.50 IN JUNE,

—WILL BUY—

A Strong Full Colony of Pure Italian Bees

in Root's new Dovetailed or the old Simplicity hive, as you prefer. Each to contain a fine tested queen and plenty of bees and brood. Everything first-class. Pure Japanese Buckwheat, per bu., $1; ½ bu., 60c; ¼ bu., 35c, bag included. Scotch Collie Pups, $4 each.

N. A. KNAPP, Rochester, Lorain Co., O.

6tfdb Please mention this paper.

SECTIONS.

$2.50 to $3.50 per M. Bee-Hives and Fixtures cheap. **NOVELTY CO.,**
6tfdb **Rock Falls, Illinois.**

EGGS! Brown Leghorn, White Leghorn, $1.25. Black Minorca, Plymouth Rock, Pekin Duck, $1.50. Light Brahma, Langshan, Game, $2 per 13 eggs. Strictly pure-bred. Ship safely anywhere. Illustrated circular free. **GEER BROS.,**
1tfdb **St. Marys, Mo.**

☞In responding to this advertisement mention GLEANINGS.

OAK HILL POULTRY FARM.

The home of the best general-purpose fowl for the farmers and the fanciers, the Barred PLYMOUTH ROCKS.

This year, as in he past, I will de-'ote my five large oops to Plymouth tocks only, and try o fill all orders promptly from first class stock.

Eggs at $1.50 per 13, and $1.00 for each additional setting in the same shipment. 6d

E. J. KENNEDY, Troy, Pa.

☞In responding to this advertisement mention GLEANINGS.

BUCKWHEAT.

MARTIN'S PROLIFIC.

This buckwheat under favorable conditions will yield 70 bushels per acre, as it is an enormous yielder—stands up well and endures drouth remarkably well. Last season it yielded double the quantity per acre sown, under the same or rather worse conditions than my Japanese, 100 rods distant, and did not blast one-half as bad. I think it will supersede the Japanese when better known. Price $1.50 per bushel, 85c per half bushel, bags included. $1.25 per bu. for 5 to 10 bushels. Remit by P. O. order, bank draft or registered letter to the originator, 7-10db

WM. MARTIN, CASS CITY, TUSCOLA CO., MICH.

Please mention this paper.

GOLDEN ITALIANS.

AND THE BEE-KEEPERS' REVIEW.

I have purchased the queen that, together with her bees, took **first premium** last fall at the Detroit Exposition. They are the Five-banded Golden Italians. The **handsomest** and **gentlest** bees, and the **yellowest** drones I have ever seen. They are not inclined to rob, and it is claimed they work on red clover. After June 1st I shall offer the daughters of this queen for $1.00 each, or 6 for $5.00. I have a number of tested queens, reared last season by H. Alley from his "one-hundred-dollar queen," that I will sell for $2.00 each. In order to secure a few orders early, to all persons who send me, before **May 1st,** $1.75, I will send one five-banded Golden Queen, and the **BEE-KEEPERS' REVIEW** one year; for $2.75 one of the tested Alley queens and the **REVIEW** one year. The **REVIEW** is published monthly by W. Z. Hutchinson, at $1.00 a year. The **REVIEW** will be sent on **receipt of order.** Untested queens will be sent after June 1st; tested queens the last of May. All orders will be filled in rotation. Make money orders payable at **Flint, Mich.** Address

ELMER HUTCHINSON,

Rogersville, Genesee Co., Mich.

Please mention this paper.

NEW FACTORY.

No. 1 Sections, $3.50; No. 2, $2.75. Fine Comb Foundation a specialty.

M. S. ROOP, 520 East Broadway,
6-17db **Council Bluffs, Ia.**

☞In responding to this advertisement mention GLEANINGS.

BEESWAX

FOR SALE.—Crude and refined. We have constantly in stock large quantities of Beeswax, and supply the prominent manufacturers of comb foundation throughout the country. We guarantee every pound of Beeswax purchased from us absolutely pure. Write for our prices, stating quantity wanted. **ECKERMANN & WILL,**

Bleachers, Refiners, and Importers of Beeswax.

5-16db **Syracuse, N. Y.**

☞In responding to this advertisement mention GLEANINGS.

"I tell you what, Jones, Levering Bros. sell the best goods and at the lowest prices of any one I've struck yet."

The LARGEST and BEST EQUIPPED BEE-HIVE FACTORY IN THE WEST.

THE NEW DOVETAILED HIVE A SPECIALTY.

Every thing used by practical bee-keepers by wholesale and retail. Send for our '91 illustrated price list and save money. Address 4-15db

LEVERING BROS., Wiota, Cass Co., Ia.

☞In responding to this advertisement mention GLEANINGS.

Please mention this paper. 2tfdb

SAVE FREIGHT

By buying your supplies near home. Catalogue for your name on a postal card. Address

4-8db **J. W. ROUSE & CO., Mexico, Mo.**

d Please mention this paper.

NEW * FACTORY.

Bee-Hives, Sections, Frames, Etc.

We have moved into our new factory, which is the largest and most complete in the world. We make the best goods, and sell them at the lowest prices. Write for free illustrated catalogue.

C. B. LEWIS CO.,

17-tfdb **WATERTOWN, WIS.**

☞In responding to this advertisement mention GLEANINGS.

1891. NEW BEE-HIVE FACTORY. 1891.

Root's Dovetailed Hive a specialty. Price List free. Save your freight, and order early of

1tfdb **GEO. W. COOK,**
Spring Hill, Johnson Co., Kan.
Please mention this paper.

Syracuse, New York,

IS A DEPOT FOR THE EAST FOR ALL OF A. I. ROOT'S APIARIAN SUPPLIES.

FOUNDATION is Our Own Make.

Don't buy foundation of us, for it would please you.

F. A. SALISBURY.

Our Foundation is kept for sale by
HENRY ALLEY, Wenham, Mass.

In writing to advertisers please mention this paper. 4tfdb

1891 Early Italian queens from bees bred for business. Each $1.00; six $4.50. Order now, pay when queen arrives. 7tfdb W. H. LAWS, Lavaca, Ark.

FOR SALE. Black Minorcas and Pekin duck eggs, $1.00 per 13. Bear-paw corn, 75c peck, $2.75 per bush. J. V. HURLESS, Archer, Harrison Co., O.

NEBRASKA

For Nuclei Colonies and Italian Queens. Circular and price list now ready. 7tfdb

J. M. YOUNG.

Box 874. **Plattsmouth, Neb.**

BEE-KEEPERS' SUPPLIES.

We manufacture all kinds of bee-keepers' supplies and novelties, for wholesale and retail trade.

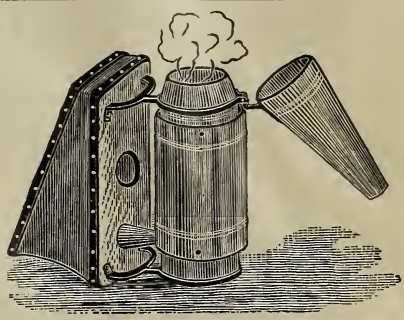
Best · Goods · at · Lowest · Prices.

Send for FREE illustrated catalogue for 1891.

THE BUCKEYE BEE SUPPLY CO.,

3-8db **NEW CARLISLE, OHIO.**

Please mention this paper.



Smokers, Foundation, and all kinds of bee-keepers' supplies furnished at lowest cash price. If you want the best Smoker in the market get one of the Quinby old reliable—made the strongest; and although the first cost is more than that of any other made, the Jumbo is the boss of all. It has been used constantly in yards for 8 years, and still it goes. Send and get price list of Smokers, Foundation, Sections, and every thing used in the apiary. Dealers should send for dealer's list on smokers.

4-14db W. E. CLARK, ORISKANY, N. Y.

☞In responding to this advertisement mention GLEANINGS.

SUPPLIES.

Standard goods, best shipping-point, reasonable price. 36-page catalogue free.

WALTER S. POUDER, 175 E. Walnut St.,

6-18db Indianapolis, Ind.

THE CANADIAN

Bee Journal	*Poultry Journal*
Edited by D. A. Jones.	*Edited by W. C. G. Peter.*
75c. Per Year.	*75c. Per Year.*

These are published separately, alternate weeks, and are edited by live practical men, and contributed to by the bes writers. Both Journals are interesting, and are alike valuable to the expert and amateur. Sa ple copies free. Both Journals one year to one address $1. Until June 1st we will send either Jou. nal on trial trip for 6 months for 25 cts.

The D. A. Jones Co., Ld., Beeton, Ont.

☞ lease mention GLEANINGS.

BEE-KEEPERS' SUPPLIES.

GOOD AS THE BEST; CHEAP AS THE CHEAPEST.

Send for my new Price List of Hives, Sections, Foundation, Queens, etc., etc. We are prepared to fill your orders at once, and guarantee satisfaction. Will pay 23c cash, or 25c in trade, for fair average BEESWAX, delivered here. 3-8db

A. A. WEAVER, Warrensburg, Johnson Co., Mo.

☞In responding to this advertisement mention GLEANINGS.

KIND WORDS FROM OUR CUSTOMERS.

I bought one of your Popular Histories of the Civil War last fall for 75 cts., and I would not take $5 for it if I could not get another. It is a fine book for so small a price. W. A. PECK.
Brunswick, O., Jan. 9.

KIND WORDS FOR OUR 1891 SECTIONS.

The goods you shipped to me by freight came through all right. The freight on the whole amount of 815 lbs. was only $10.40. The sections are just simply beautiful. Nothing was damaged in the least. WILLIE DOUGLAS.
Lexington, Tex., Jan. 18.

The shears came to hand. They were for a Christmas present for my better half, and she was so highly pleased with them that she has shown them to her lady friends, and they are so pleased with them that they all want a pair, so I order ten pairs.
Hastings Minn., Jan. 4. WM. DYER.

OUR $12 SEWING-MACHINE.

Our sewing-machine came to hand in good order, and does as good work as a fifty-dollar machine. It certainly is a marvel for the money. Freight was $1.60. J. H. ARCHER.
Mt. Calm, Tex., Jan. 1.

GLEANINGS FOR ADVERTISING.

Please discontinue my advertisement, as I have received a considerable number of replies, and can surely make a selection from them. I find GLEANINGS is a splendid place to put an adv't to reach the eye of the public. Please accept thanks.
Monongah, W. Va., Feb. 28. S. RAY. HOLBERT.

WASH AND BE CLEAN.

What you say under the head of "Wash and be clean" is just what I have been looking for in every number of GLEANINGS; for I felt sure that it would come, sooner or later; and I thank you for it —not on my own account (for I had found out the remedy without the $4.00), but for humanity's sake.
Leon, Wis., Mar. 7. B. F. FOX.

HOW OUR COMPOUND ENGINE WORKS.

The engine works all right, except the bolts that connect the boxing on the main-shaft journal. They will work loose while the engine is running, and I have to stop very often to tighten them up. Perhaps you can suggest a remedy. I wish to tell you the good points about the engine that I have learned so far. My boiler is only 16 inches in diameter by 40 inches high. I have no trouble in keeping the steam at 120 lbs., and we run our hive machinery and a heavy 12-inch emery plow-share grinder at the same time, without any trouble, only as noted above. A. B. HERMAN.
Burnett's Creek, Ind., Mar. 10.

My goods were received in San Francisco Dec. 31. Every thing was correct. I am especially pleased with the section-former. It does beautiful work. Rate from Reno, $1.18; only about $3.00 saved.
Bouldin Island, Jan. 26. H. S. THOMAS.

THE NEW IMPROVED DOVETAILED HIVE.

You have made some grand improvements on the Dovetailed hive, for I find the honey-board stuck fast every time with the old hive. However, I think the improved hive will do better. Don't go back on that outside shell for wintering. That strikes me as just about right, if it is put up well so it can be painted, as the senior said. A. T. MCKIBBEN.
Flag Spring, Ky.

A GOOD TESTIMONIAL FOR OUR ANEROID BAROMETER.

The aneroid barometer came to hand in good order, Tuesday last. I am more than pleased with it, and consider it the best investment for the money I have made for some time. I have used both mercurial and aneroid instruments costing several times the amount; but I ask for no better than the one you sent me. J. Y. DETWILER.
Toledo, O., Feb. 28.

BEE-KEEPER'S GUIDE.

16TH THOUSAND JUST OUT.

Plain, Practical, Scientific. Every farmer and bee-keeper should have it.
PRICE REDUCED TO $1.00. Liberal discount to dealers. Address

A. J. COOK, Agricultural College, Mich.
Please mention GLEANINGS.

UNTESTED QUEENS,

until June 1st, $1.00; after June 1st, 75 cts.; $8.00 per doz. Tested queens, after June 1st, $1.50. Select tested, $2.00. Bees by the pound until June 1st, $1; after June 1st, 75 cts. Can supply any demand from first of May. 8tfdb

PAUL L. VIALLON, BAYOU GOULA, LA.
☞In responding to this advertisement mention GLEANINGS.

CHOICE ITALIAN

Queens reared in full colonies. Tested, $2.00; Untested, $1.00; Select tested, $3.00. One lb. of bees, $1.50; half lb., $1.00. 8d

I. L. PARKER, TRACY CITY, TENN.
Please mention this paper.

WANTED.—To exchange apiary of 150 colonies of bees. Will take any kind of farm stock, goods or groceries. ANTHONY OPP, Helena, Ark.

SUPERIOR GOLD-EYED NEEDLES.

Cut shows the contents of the package, half size. The bodkins, darners, etc., as shown, are, not gold-eyed, but there are besides these, four papers of elliptic gold-eyed needles such as are usually sold at 10c a paper. Our price for the pkg. 15c. 10 for $1.25, 100, $12. By mail 1c each extra.

A. I. ROOT, Medina, O.

IRWIN AUGER BIT.

This is a superior bit formed from a steel rod. The spiral is rolled out by very heavy pressure of a special machine. They are guaranteed to always run free.

PRICE LIST.

Sixteenths	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Price each	25	25	28	31	35	38	41	45	48	51	55	60	65	70	75	80	85
Postage each	2	2	2	3	3	3	4	4	4	4	5	5	5	5	5	5	5

The first row of figures gives the size in sixteenths, the second the price each, and the third the postage each, if sent by mail. In lots of 5 or more, 5 per cent off, or a full set, 10 per cent off.

A. I. ROOT, Medina, O.

New Orleans Apiaries.

Italian and Carniolan bees and queens for sale.

Send in your orders now, and the money when bees or queens are wanted. Purity and safe arrival guaranteed. Address 7d

J. W. WINDER, 572 MAGAZINE ST., NEW ORLEANS.

Mention this paper.

FOR SALE 50 colonies of bees in new hives, Simplicity frames, at $5.00 per colony. One-half cash, balance on time to suit the purchaser, with good security. 8-9d THOS. GEDYE, Kangley, LaSalle Co., Ill.

FOR SALE!

50 TO 75 COLONIES ITALIAN BEES.

Big discount on nailed hives for next 30 days. Send for catalogue.

O. H. HYATT, SHENANDOAH, IOWA.

Black and Hybrid Queens For Sale.

Six fine mismated Italian queens, 40 cts. each. F. C. MORROW, Wallaceburg, Ark.

I have 17 mismated queens in an out-apiary that I will sell April 20th, at 35c each, 6 for $2.00. W. H. LAWS, Lavaca, Ark.

During April I will sell 40 hybrid queens, all of last year's raising, at 40c each, or 3 for for $1.00. G. OBERKAMPF, New Braunfels, Comal Co., Tex.

Mismated queens at 50c each. Satisfaction guaranteed. D. D. Hammond, or Eden Valley Apiary, Malone, Ia.

Twelve hybrid queens for sale, 60 cts.; raised last fall. E. GREELEY, Lorain, Lorain Co., O.

We have in the South some 15 hybrid queens and some 12 black ones which we shall be glad to dispose of. We will furnish the hybrids for 75 cts. each, and the black ones 35 cts. each. A. I. ROOT, Medina, Ohio,

Wire Cloth.

For door and window screens, tacking over hives and nuclei for shipping, making bee and queen cages, and a variety of purposes. We have the following list of green and black wire cloth which is not exactly first class, but is practically as good for the purposes mentioned, and at prices MUCH BELOW the ordinary price. You can no doubt select from this list a piece to suit your needs Price in full pieces, 1¾ cts. per square foot. When we have to cut it, 2 cts. In case the piece you order may have been taken by some one else before your order comes, please say whether we shall send the nearest in size, or cut one the size ordered at 2 cts. per ft., or give a second or third choice.

No. of Rolls, and Color.	Width, In's.	Length, Ft.	Sq. Feet.	Price of a Full Roll.	Pieces less than 100 ft. long. These figures are the number of square feet in each piece. Multiply by 1¾ cents for the price of piece.
10 green	8	100	67	$1.17	65, 64, 63, 63, 63, 62, 33
25 green	12	100	100	1.75	
5 green	24	100	200	3.50	140, 8, green; 200 black.
35 green	26	100	217	3.50	This is below reg. pr. of 1¾ c.
14 green	28	100	233	4.08	224, 224, green.
15 green	30	100	250	4.37	
6 green	32	100	267	4.67	
18 green	36	100	300	5 25	
6 black	38	100	317	5.54	289, black; price $4.70
5 green	38	100	317	5.54	
3 black	40	100	333	5.83	
7 black	42	100	350	6.12	
15 green	30	100	250	4.37	

A. I. ROOT, Medina, Ohio.

Cash for Beeswax!

Will pay 28c per lb. cash, or 30c in trade for any quantity of good, fair, average beeswax, delivered at our R. R. station. The same will be sold to those who wish to purchase, at 33c per lb., or 37c for *best selected wax*.

Unless you put your name *on the b x*, and notify us by mail of amount sent, I can not hold myself responsible for mistakes. It will not pay as a general thing to send wax by *exp'ess*.

A. I. ROOT, Medina, Ohio.

Job Lot of Wire Netting.

CUT PIECES AT A LOWER PRICE THAN FULL ROLLS.

Having bought from the factory, at our own price, five or six hundred remnants, as listed below, we are able to give you the choice of a great variety of pieces at the price of a full roll or lower. Full rolls of netting are 150 ft. long, and when they are cut we have to charge nearly double the full-roll rate, because it is so much trouble to unroll, measure, and cut, and run the risk of having a lot of remnants on hand. No doubt it is in this way that the following remnants have accumulated. It costs a good deal to get all this in shape so we can easily pick out from the lot the piece you want. But to move it off quickly, we put the price down so you can all have a chance at it. Remember, first come, first served. In ordering, therefore, name a second or third choice, or say that we may send the nearest we can if the piece selected is gone. On 5 pieces deduct 5 per cent, on 10 pieces 10 per cent. These remnants are shipped only from here. If any of you want to secure some, and don't want them shipped till later, when you will order something else, so as to save freight, pick out the pieces you want, send remittance with the order, with request to lay by till called for, and we will mark them as belonging to you. We prefer to ship them right out, however.

LIST OF POULTRY-NETTING REMNANTS.

Width in in's.	Size of Mesh.	No. of Wire.	Cts. p'r Sq. Ft.	Length of each piece. Multiply by the width in feet to get the number of square feet in each piece. Then multiply by the price per foot for the price per piece.
72	2	20	½	95, 27; 60 in., 32.
60	2	19	⅝	32, 28. 25.
72	2	19	⅝	125, 103, 100, 100, 94, 88, 81, 73, 68, 67, 50, 48, 19.
30	2	18	1	60, 25; 12 in., 107.
60	2	18	1	67. 20.
72	2	18	1	61. 53, 48, 47, 37, 35, 22, 22.
36	2	17	1¼	23 15; 24 in. wide, 77; 60 in , 25.
12	2	16	1½	78; 18 in. wide, 72, 72, 40; 24 in. wide, 94, 88
36	2	16	1½	34, 32, 23; 30 in. wide, 46, 44, 24; 48 in. wide. 48.
72	2	16	1½	60, 58, 56; 48 in. wide, 48.
18	2	15	2	87, 61, 30; 12 in. wide, 100.
24	2	15	2	100, 90, 69, 52, 33, 33, 13, 12.
30	2	15	2	127, 21, 6; 60 in. wide, 21, 20.
36	2	15	2	17, 13, 7, 7, 7, 6, 5.
42	2	15	2	121. 35, 26. 23, 20. 8; 72 in. wide, 36, 33, 9.
48	2	15	2	72. 49, 48, 45, 38, 37. 30, 29, 26, 14.
36	2	14	3	29; 42 in., 71; 54 in. wide, 122.
24	1½	20	1	18 in. wide, 14; 30 in., 14.
42	2	14		85, 71, 59.
30	1½	19	1	34, 33, 36 in. wide. 47, 47.
42	1½	19	1	85, 59; 60 in., 56; 72 in., 64, 63, 10.
18	1½	18	1½	40, 14; 54 in., 12; 60 in., 34.
60	1½	18	1½	65. 19.
30	1½	16	2½	79; 36 in., 14, 7; 42 in., 34; 48 in., 92.
36	1¼	20	1½	22.
36	1¼	19	1⅝	48, 12, 10; 24 in., 42; 30 in., 75; 48 in., 78.
36	1¼	18	2	15, 11. 10; 30 in., 6; 42 in., 80; 48 in., 22; 72 in., 8.
48	1	20	1¾	53; 72 in., 51; 30 in., 96; 9 in., 40.
24	1	19	2	26; 9 in., 24; 42 in., 50, 34; 48 in., 100, 40, 25; 60 in., 26; 18 in., 50.
32	1	18	2¼	85, 32; 9 in., 32; 10 in., 20; 24 in., 23; 30 in., 69, 51.
36	1	18	2½	37; 48 in., 30; 60 in., 59.
9	⅜	20	2¾	33, 7; 36 in., 75, 55.
9	⅜	19	3	128.
24	3	16	1	46, 19; 36 in., 86; 42 in., 14.
36	3	15	1½	63; 48 in., 60.
48	3	14	1⅞	45; 72 in., 100, 70.
14	4	14	3	166, 52, 35, 23.
22	4	14	4	107, 68, 35, 17, 15.
30	4	14	4½	52, 47, 36, 33, 30. 29 19, 18, 13, 9.
34	4	14	4¾	43, 37, 34, 25. 24 23, 18.
42	4	14	5	144, 117, 68, 62, 62, 60, 23, 22, 22, 15, 12, 12, 12, 8, 6.
46	4	14	5½	82, 50, 44, 11, 5.
18	8	13	2	68 ft.; 36 in., 200 ft. at 4c; 45 in., 247 ft. at 5c.

Four and eight inch fencing. Price in fourth column is the price per foot in length.

A. I. ROOT, Medina, O.

CONTROL YOUR SWARMS.

N. D. West's coil wire queen-cell protectors will do it, and you can REQUEEN your apiary during the swarming season. Pronounced the BEST by such men as

CAPT. J. E. HETHERINGTON, CHERRY VALLEY, N. Y.,
P. H. ELWOOD, STARKVILLE, N. Y.,

and others. Cell-protectors, $3.00 per 100, or 12 for 60c, by mail. Cages, $5.00 per 100, or 12 for $1.00, by mail. Samples of both, with circular explaining, 25 cts. See cut and description on page 321. Patent applied for. Address

N. D. WEST, MIDDLEBURGH, SCHOHARIE CO., N. Y.

☞In responding to this advertisement mention GLEANINGS.

BEES & SUPPLIES FOR IOWA.

Send for my supplement for 1891, now ready (no new catalogue). Say whether you have my catalogue dated 1889 and 1890. Address *Oliver Foster,*
5-tfdb Mt. Vernon, Linn Co., Iowa.

☞In responding to this advertisement mention GLEANINGS.

YOU'RE TOO LATE!

If you intend to try **MY NEW SEEDLING POTATOES** and don't **SEND IN YOUR ORDER BEFORE the FIRST of MAY,** as, **after that** date, I **will not spare one,** and may **be all sold out before then.** If you intend to try for any of the premiums offered in this and the other journals, send in your order without delay. **Bulletin No. 70** of the **Mich. Agricultural College** again **places them at the head.** In connection with my former offers I will give all **a certificate** that will be taken as **part pay** on orders for **QUEENS** as follows: For $1.00 I will send 2 lbs. of my No. 4, and a certificate good for **50c;** for $2.00 I will send 1 lb. of each and a **75c certificate;** for $2.25 I will send 1 lb. each of No. 1 and 2, and 2 lbs. of No. 4 and a **$1.00 certificate.** I want **"YOU"** to try them and make you this offer. By you I mean **EVERYBODY** until sold out. At these prices I **PREPAY THE CHARGES.** 8d

JACOB T. TIMPE,
LOCK DRAWER 90. GRAND LEDGE, MICH.

☞In responding to this advertisement mention GLEANINGS.

BARGAINS. SEND FOR '91 CIRCULAR FREE.
Dovetailed and Simplicity hives, Snow-white Sections, Foundation, wholesale and retail, Golden Italian Queens, 265 colonies of bees, etc. We furnish every thing needed in an apiary. Address
JOHN NEBEL & SON, HIGH HILL, MO.

In writing to advertisers please mention this paper. 3-8db

5-BANDED GOLDEN ITALIANS.

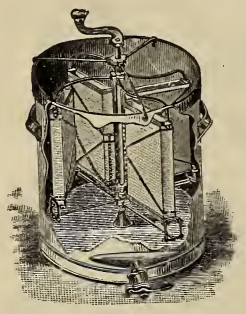
Beauties! The best workers we ever saw. Work on red clover. Very gentle. Drones ¼ to ⅜ yellow. Won **1st Premium at Ill. State Fair** in 1890. Nearly 300 booked for 1891. Warranted Queens, May, $1.25, 6 for $6.00; after June 1st $1.00, 6 for $5.00. Special discount for large orders as to dealers. Have your order booked now in order to get them when wanted. Satisfaction guaranteed. No foul brood. Select Barred Plymouth Rock Eggs, $1 per 13. Good reference given.
1tfdb **S. F. & I. TREGO, Swedona Ill,**

☞In responding to this advertisement mention GLEANINGS.

HOFFMAN FRAMES.

By cutting the top bar of my spacer, a hanging frame can be worked on the principle of the Hoffman frame. Price of spacers, $10.00 per 100.
8tfdb J. B. WILCOX, Manistee, Mich.

☞In responding to this advertisement mention GLEANINGS.



EVERY THING USED BY
BEE-KEEPERS.
EDWARD R. NEWCOMB,
Pleasant Valley, N. Y.

CATALOG FREE

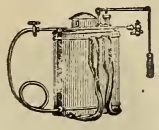
5tfdb Please mention this paper.

Bee-Keepers' ❋ Supplies.

We are prepared to furnish bee-keepers with supplies promptly and at lowest rates. Estimates gladly furnished, and correspondence solicited. Our goods are all first class in quality and workmanship. *Catalogue sent free.* Reference, First National Bank, Sterling, Ill. Address

WM McCUNE & CO.,
21-20db Sterling, Illinois.

☞In responding to this advertisement mention GLEANINGS.



SPRAY YOUR FRUIT TREES AND VINES

Wormy Fruit and Leaf Blight of Apples, Pears, Cherries, Grape and Potato Rot, Plum Curculio prevented by using EXCELSIOR SPRAYING OUTFITS.
PERFECT FRUIT ALWAYS SELLS AT GOOD PRICES. Catalogue showing all injurious insects to Fruits mailed free. Large stock of Fruit Trees, Vines, and Berry Plants at Bottom Prices. Address WM. STAHL, Quincy, Ills.

☞In responding to this advertisement mention GLEANINGS.

PATENT WIRED FOUNDATION.

The Greatest FOLLY of MODERN BEE-KEEPING is WIRING BROOD-FRAMES.
—Dr. G. L. Tinker.

OUR WIRED BROOD FOUNDATION is BETTER, CHEAPER, and not HALF the trouble to use that it is to WIRE FRAMES Many may confound the two, but they are ENTIRELY different. J. VAN DEUSEN & SONS, Sole Manufacturers, Sprout Brook, Mont. Co., N. Y.

☞In responding to this advertisement mention GLEANINGS.

A glimpse of our Factory, now making carloads of **Dovetailed Hives,** Lang. Simp. hives, plain Lang. hives, Alternating hives, Chaff hives, sections, etc. Many articles not made by others.

We can furnish, at wholesale or retail, **Every thing** of practical construction needed in the apiary, and at **Lowest Prices.** Satisfaction guaranteed. Send for our **New Catalogue,** 51 illustrated pages, free to all. 4tfdb

E. KRETCHMER, Red Oak, Iowa.

☞In responding to this advertisement mention GLEANINGS.

GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

Published by A. I. Root, Medina, O.

Vol. XIX. APRIL 15, 1891. No. 8.

STRAY STRAWS

FROM DR. C. C. MILLER.

DON'T TINKER with your bees unnecessarily.

SUGAR has a two-cent bounty. How about honey?

A GENERAL CALL for State associations. World's Fair.

B. E. RICE (*A. B. J.*) thinks painting hives "a loss of both time and money."

QUEEN-EXCLUDERS, says the *B. B. J.*, are indispensable in working for extracted honey.

A STANDARD FRAME may yet be adopted in California, according to a report in *C. B. K.*

I WISH friend Corneil had included a double wall without packing, in the experiments reported on page 207.

ST. PATRICK'S DAY, March 17, my four colonies outdoors had a good fly—I think the first full flight in four months.

EGGS ARE DESTROYED for me in queenless colonies in the hottest weather, as well as cooler. This in reply to G. E. Fradenburg, p. 229.

ANOTHER. The *Missouri Bee-keeper*, Unionville, Mo. Nicely printed, in type big enough for those hard of hearing. E. F. Quigley, editor.

ADULTERATION! Styan says that *straws* get into the cream he furnishes in *C. B. K.* Still, that may be borne if he doesn't water his cream too much.

"A LITTLE MIXED" is that last item on p. 229. Mr. James uses hives of bees to hatch chickens, but the Medina folks use hives without bees. Isn't an old hen better?

A BIG COUNTRY this. I didn't realize how big when I wrote my little hymn, "In January . . . . the bees store nary a drop." The *California Bee-keeper* says that won't do down there.

WOODEN SHOES are worn and liked by Mrs. Harrison. They keep the feet warm and dry. I had a pair. I don't know what became of them. I think my wife didn't like the looks of them.

AN ITEM on page 230 is headed, "A colony of bees which secrete no propolis," as if that were something strange. None of my bees secrete propolis. They just gather it from trees or something.

PORCELAIN DOOR-KNOBS get loose. One of ours got loose the other day, and, instead of throwing it away as usual, I put it into the fire with the metal shank in it, took it out when the lead melted, and it was as solid as when new. But it cracked the porcelain somewhat.

COWAN'S NEW BOOK. I've read it all through, although some of it was pretty hard to understand. It was like taking a dose of medicine a little, but I feel the better for it afterward. It's a capital book.

THAT OLD FRENCHMAN, Ch. Dadant, is not in his dotage, by any means. A strong and well-written article from his pen, of four pages, in the *Revue Internationale*, defends Father Langstroth against the charge of copying Debeauvoys and others.

A NEW THEORY of foul brood. A. Leech, in *A. B. J.*, says the moth-miller lays eggs in the cells beside the queen's eggs, which hatch out, suck the food from the bee larvæ, which die, causing foul brood. As the newspapers say, this lacks confirmation.

THE CHICKENS scratch up the posy-beds every now and then, and then your wife sheds a few quiet tears. I'll tell you how to make her happy. Fence in the beds with poultry-netting two feet high. You can step over it, but the hens don't know enough to fly over—at least our Plymouths and Banties don't.

AFTER PUTTING my bees in the cellar I noticed that they didn't hang in as large clusters under the frames as in the preceding winter. I didn't know why. To-day, March 18, the cellar being colder than early in the winter, the clusters are much larger than then. I don't know why. Do you?

HERE'S A "WRINKLE" from Walter Marshall, in *B. B. J.* He thinks the reason that some have trouble in using, for the second time, sections partially filled, is because of propolis on the edges of the cells. So he scrapes off the surface of the comb to within $\frac{3}{8}$ of an inch of the midrib, early in the season, when the wax is brittle with cold. There's no slow working, and no *old* look when done.

MELILOT. Bignens, in *Revue Internationale*, reports a profitable crop of melilot, getting a good crop of honey during its bloom, while surrounding bee-keepers a mile or two distant got little or nothing. It was sown with barley, and sheep and cattle ate the straw greedily. Mr. Bertrand, the editor, says his pony ate a mixture of oats and melilot, and the pony much preferred it thus "perfumed" to the clear oats.

"WE" or "I"? Bro. Newman says "we" has the indorsement of Ernest on account of the plurality of editors. Yes, it's all right to say "we" for two. We do at our house. But when it's I, say I. I see the "I" is used in GLEANINGS in 15 different editorials where "I" was meant. Bro. Newman thinks "we" looks better. That's a matter of taste. He says "we" "has the indorsement of many centuries." True, and so it has for the chief ruler of a nation, and yet to-day the chief ruler of the greatest nation on earth says "I."

WAX SCALES are found, plenty of them, wasted on the bottom-board, when a swarm is hived in an empty hive without foundation or comb. Few or no wax scales are found on the bottom-board of a colony run for extracted honey, if they have abundance of empty combs. The case should be exactly reversed, if bees secrete wax whether needed or not. See the bearing on page 212, friend Root? I'm with Prof. Cook, but I can't answer your argument.

FOUL BROOD. S. Corneil, in *C. B. J.*, says foul brood may be carried in foundation. Melting in a sun extractor will not kill it, and heating to 160° in making foundation will not kill it. To be entirely safe, it must be heated to 257°, or kept at 200° for some days. D. A. Jones thinks this a case where "science and practice do not agree." He thinks "the heat necessary in making foundation is great enough to destroy the germs of foul brood." The thing needs careful consideration. See editorial, page 341.

GENERAL CORRESPONDENCE.

MANUM'S NEW METHODS OF RUNNING SEVERAL APIARIES ALONE.

SIX OUT-APIARIES AND ONE AT HOME, AND NO HELP TO BE HIRED.

"Why, how do you do, Henry? Walk in, and have a seat. How do the chickens prosper, and how many have you?"

"Well, Manum, I am pretty well; and as to the chicks, they are doing well. I have now 500, from two to six weeks old, and 500 eggs in the incubator."

"Well, well, Henry; you are going into the broiler business rather heavy, I should judge. You must think it a profitable business, or you would be more moderate in your new venture."

"Yes, I think it will pay better than the bees have for a few years past, though I shall not give up the bees, but work the two together; for, you see, the main work and attention with the chicks comes at a time when I can do nothing with the bees, as I start my incubators in December, and aim to dispose of my chickens by June 15th, after which my whole time is devoted to the bees."

"I believe, Henry, you raised a few broilers last year. Did you keep an account of the cost of raising them, so you *know* for a certainty that there is a profit in raising them?"

"Yes, I kept both debit and credit, and I know just what profit was made. Myself and partner cleared just $106.00 on 175 chicks, and expect to make a better average per cent this year with our new brooder-house, and better facilities. But, Manum, I came over to talk bees with you, and to ask you how you propose running your bees without help this season, if your method is no secret."

"No, Henry, I have no secrets pertaining to the bee-business, therefore I will try to explain to you, as best I can, just how I propose to manage.

"First, I shall do all in my power, through the month of May—by contracting and feeding—to stimulate brood-rearing, in order to get a large force of workers hatched out by the time clover blossoms, which is usually about June 10th; and as then is the time swarming commences, I shall remove the queens from such colonies as have started queen-cells, or that show any signs of preparing to swarm; then in eight days I remove all queen-cells found in these hives, except, perhaps, from one or two that I wish to rear queens from. In these I allow the cells to remain until they are old enough to transfer to the queen-nursery to hatch; and perhaps at this second visit I remove fifteen or twenty more queens, and in six or eight days more I again visit this yard and cut out queen-cells as before, both from the first lot where the queens were taken out—should there be any—and the second lot, and remove queens from as many more as I find preparing to swarm. Now, by the time I make the third visit I shall find a lot of young queens hatched in the nursery; and the colonies from which I removed the first queens will be in condition to receive and accept a virgin queen, so that I will run in a virgin queen in each colony. All this time I must manage to have a supply of virgin queens on hand, to introduce at each visit until I have gone over the whole yard; and, besides, I have all the other work to do in each yard, such as putting on and taking off sections, looking after the nuclei in which I have many queens fertilized for the market, caging and mailing queens, etc. In this way I can attend to six out-apiaries by going to each once a week. The seventh, being the home apiary of only 60 colonies, I can look after nights and mornings, or as I can best catch the time. By this method I can prevent swarming, and dispense with high-priced help; and, moreover, I am sure that each colony has a young queen in the fall."

"Well, Manum, do you think you can take care of seven apiaries alone?"

"Yes, Henry, I think I *could;* but I expect Fred to help me look after the sections and nuclei, and help other ways."

"What do you propose to do with the queens you remove?"

"I expect to sell a good many of them. As I offer them at a low price, many bee-keepers will avail themselves of this opportunity to introduce my strain into their apiaries. What I do not sell I shall use in making artificial swarms; for I must increase a little—at least enough to keep my number of colonies good."

"Do you think you will secure as much honey by this method as you would by allowing natural swarming?"

"Well, Henry, that is a question I am not fully prepared to answer. But my opinion is, I shall not, and I shall have to work harder myself. But I think, after deducting the expense of hired help, the result in *dollars* will be about the same with one method as the other, in a good season; while in a poor season I can save money by this plan of removing queens."

"What if there should come a rainy day or two—wouldn't that disarrange your visits to the out-apiaries?"

"No, not very much, for I aim to have at least one day's leeway, though I often am obliged to visit my apiaries in the rain; but by having my record-book constantly with me I know every morning just what must be done that day; and as I can, upon a pinch, visit two and even three yards in one day, I can many times manage to avoid being out in rainy weather, because I can work two yards in one day when it is necessary, in order to catch up with my work."

"How do you introduce virgin queens so successfully as you do?"

"I do that simply by rendering the colony hopelessly queenless, as I have stated above, by removing the old queen and keeping all queen-cells cut out until they have neither eggs nor larvæ with which to rear a queen, and then simply run the virgin queen in without ceremony. I usually run them in about the 15th day after removing the old queen, though the time varies from the 12th to the 20th day after, according as I have the time and the virgins to introduce."

"Do you run them in at the entrance or at the top of the hive?"

"Usually at the top. At the time this work is done the sections are on the hives, and I simply raise one corner of the enameled cloth that covers the sections, and let the queen run down among the bees in the sections. This is done so carefully that the bees are not disturbed in the least, and the queen is usually accepted. I introduced over 500 last season, and did not lose over a dozen."

"Would it not be better to give them a fertile queen instead of a virgin?"

"No, Henry, I think not, because such a queen would at once commence laying, and soon fill the combs with eggs, and there would be a large amount of honey consumed in rearing the brood, the bees from which would be useless to me as honey-gatherers, as the honey season would be over before such brood would hatch; while, on the other hand, by leaving them queenless 15 days, and ten to fifteen days more before the young queen commences to lay, makes at least 25 days, right in the best of the honey season, that they are without brood to feed; hence the honey they would have consumed is stored in the hive, and the colony is just as well off (for bees) in the fall as though a laying queen had been given them, because they have a part of July and the months of August and September in which to rear a stock of bees to carry the colony through the winter."

"Have you ever tried other methods to prevent swarming?"

"Yes, two or three of them, one of which I think is practical, and I shall practice it somewhat this season, and I believe it is original with me; and if you are in no hurry I will explain it to you, as I should like to have you try it this season."

"I don't think I had better stop now, as my chicks must be calling me by this time. I will call again in a few days, and shall be pleased to listen to the new ways; so, good-day."

"Why, what is the matter with you? What makes you so lame, Henry?"

"Oh! nothing, only a corn on one of my toes. I have sat here so long that it hurts at first starting off."

"Well, it must be a bad one, sure. You just undress your foot while I get something to put on that will surely cure it. There, I will saturate this little wad of cotton batting with extracted honey, and bind around the toe—so. There, now, dress your foot again, and I'll guarantee that to-morrow you will be thankful for the discovery."

"Well, Manum, you beat all the men I ever saw. I never have visited you yet without getting some new idea from you."

"For any new thought I may give you, or any one else, Henry, I take no credit to myself, as they originate with a higher intellect than my own. I am, like all other mortals, simply a medium through which an unseen force gives to the world these new ideas. Though many of these things I have gleaned from other mortals, through whom the same unseen force has expressed itself for the good of all, yet we should entertain no disposition to keep any good thing from our neighbors." A. E. MANUM.

Bristol, Vt.

[Very good, friend M. I suppose we are to understand by your concluding remark, that, if you should make some valuable discovery in regard to alleviating human suffering, you would not be one of the sort who would want $4.00 each from every man to whom you gave the secret. Here is our hand. Shake! But, hold on! While we are shaking hands cordially over this matter of curing a corn with extracted honey, I fear we shall not agree quite as well on the probability that you can run six out-apiaries, besides one at home, and do all the work *yourself*. If there should not be very much honey, and therefore not very much work to do, perhaps you might get along very well. But suppose we have a real old-fashioned season, where the honey comes day after day, as if it rained down, then where would one man be with six out-apiaries and one at home? When I was in Wisconsin I saw an apiary of toward 100 hives, with the hives so full of honey that the greater part of the bees were crowded out, and lay on the outside and in front. The proprietor said he *knew* the bees were losing their time in the very height of the season; but he had taken out honey all day, and it was then after four o'clock, and he was not going to work any more *for anybody*. I suppose that, in the town of Boscobel, people could be hired to work after supper as well as in other places. I remonstrated with him some, because he was going to let that harvest go to waste because of the lack of a little help. Never mind; we will not argue the case with you. But please tell us, through your notes, how you get along. Many others are interested in this very same problem of hiring help.]

CHIPS FROM E. FRANCE.

THE FLAT BOARD COVER AND ITS SLIDING MOTION.

In March 15th GLEANINGS, page 211, E. R. Root says, at the bottom of the first column, "You know that, when we put a flat cover on a hive, we kill bees if we set it flat down on the square edges of the hive; but with a sliding motion, in the hands of those who use that cover, there is not the least excuse for killing bees." Now, I just want to object to any thing being put on over the bees with a *sliding* motion. If there are bees over the frames, or on the square edges of the hive, that sliding motion rolls them up in bunches and kills them. My hives are all square edged on top, and we use a flat wood honey-board. When we put the honey-board on we use a little smoke to drive the bees down between the combs, and with a brush we brush the edges of the hive clean, and then put the board on flat, and kill *no* bees.

RAPID GROWTH OF BASSWOOD-SPROUTS.

About those basswood-sprouts (see page 223), two years ago I cleared off a yard for a new apiary. About the center of the yard there is a basswood stump two feet in diameter. The first year sprouts grew from that stump ten feet high and 1½ to 2 inches through near the ground. We cut them all off; but last year, sprouts grew again nearly as tall and large. Now, if only two or three of those sprouts had been left to take all the growth from the old roots, I think 10 years would have made a fair-sized saw-log.

ABSURD THEORIES: A GENUINE CHICKEN-STORY.

Again, page 227, J. D. Whittenburg, did the bees eat that wheat? No. What then? Mice. There are lots of false notions about bees. I have heard several men say, that, if bees were short of honey, if boiled chicken be placed under the hive, they would eat it and winter on it. Do I believe it? No. Mice again. My son Newel has just got back from the bee-keepers' convention, and says the chicken story was advanced there as a fact.

Several years ago a man told me he had a swarm of bees wintering on chicken. I went to

see it. They had eaten up one chicken, and he was going to put in another. They were in an old box hive, and were a new swarm, and the hive was half full of combs. We tipped it up. Chicken bones were there, picked clean.

"There," he said, "see, meat all gone."

"Did the bees eat it?"

"Yes," he said.

I said, "Let me take the hive down. I want to investigate this case."

I took the hive off the stand and turned it over.

"See, there is a mouse-nest up on the cross-sticks, just at the bottom of the combs."

I put in my hand to take out the nest. As I took out the nest, out jumped a mouse—two or three of them, and away they ran. "See," I said, "mice eat your chicken."

"No," he said, "the bees eat the chicken."

We cleaned out the nest and mice, and cleaned off the bottom-board. This was in the middle of winter. I could see a little capped honey up in the combs yet. I told him I thought his bees would live until about the first of March, and then starve.

"Oh, no!" he said; "I will put in another chicken." He had one ready cooked and cool.

"All right, but let us keep the mice out this time." We put the hive back, put in the chicken, and fixed the hive to keep out mice.

About the middle of March I saw the man in town.

"Well, how are the bees?"

"Oh! the bees are dead."

"How about the chicken—did they eat it?"

"No." And just then he saw a man across the street whom he must see right off.

Now, this man was a bee-keeper, had 20 colonies of bees, and had kept them a long time. He was a man of good common sense otherwise; but he was very superstitious about bees, and had a good many notions just as absurd as his chicken theory.

RENDERING WITH WAX AND STEAM.

In Feb. 15th GLEANINGS, pages 120 and 121, Mr. F. A. Salisbury gives us an excellent article on rendering wax with steam and acid. I am satisfied that all he says is true, and am glad he wrote that article; also E. R.'s comments about the Dadants. All right; that will do first rate for you chaps who have steam; but how are we poor chaps going to raise the steam? Can a man who makes from 50 to 100 lbs. of wax per year afford to put in steam-works on purpose to render out his wax? Now, give us some cheap way of raising steam, and I am with you.

THAT TRADE-MARK.

Let every tub stand on its own bottom. I want my own trade-mark. If the name of E. France & Son pasted on a package of honey is not a sufficient guarantee of a first-class article, I don't want to ride into market on some other name, and I don't want some other fellow using our reputation. E. FRANCE.

Platteville, Wis., March 31.

[If I ever said any thing I felt sure of, friend F., it is the statement regarding the flat board cover which you call in question. I generally slide the cover on the hive, and so do all our boys, and we don't roll the bees up and kill them as you speak of. Of course, we use smoke to drive down most of the bees; but there are always a few there that will run up around the edges. By using a great deal of smoke we can drive them *all* down; but it is cruelty to the bees, and unnecessary. By your plan you have to bother with a bee-brush; but by our plan we use nothing but the smoker. Now, I know that I am not alone. Witness Dr. C. C. Miller, W. Z. Hutchinson, James Heddon, R. L. Taylor, Prof. Cook, and a good many others who might be mentioned, all of whom use their flat cover substantially as I have indicated. With your arrangement, however, I hardly think you can slide the cover on. You have and desire burr-combs, and, of course, it would be impossible to slide the cover with bridges built to the top of the frames and to the cover. With the right kind of top-bars and the right bee-space and right spacing, you do not need to have burr-combs. But you say you want them for the bees to climb up on. Call upon those who do not have burr-combs, and ask them whether they get any less honey than some of those who do. I have investigated this matter quite thoroughly, and I do not believe that burr-combs make any difference one way or the other.

I join hands with you in regard to the growth of basswoods. You know that Doolittle, on page 223, seemed to question my statement that basswood from old stumps would grow large enough in ten years to make basswood lumber. If trees will make such growth in Wisconsin and Ohio, I feel sure they would do so in York State, where the basswoods grow equally thrifty, or even more so. Young trees set out, or growing from seed, will not begin to make such a growth.

The communication by F. A. Salisbury, on rendering wax by steam and acid, was designed for foundation-makers, and those who have a large quantity of wax to refine. The articles in GLEANINGS can not always hit all classes. For instance, those on wintering are of no interest to those in the South; and those in regard to making foundation are of no value to those who buy the article. Those about extracted honey are of no particular moment to those who produce the product in the comb.

After all, it is not a very difficult matter to produce a jet of steam. Take an ordinary square tin can, and have your tinner attach to it a tin pipe, and let the same communicate with a barrel near the stove. I have tried a five-gallon tin boiler on the stove, and find that it will generate quite a pressure of steam. In fact, it will heat hot a coil of pipes in my bath-room; but the probabilities are that the wax-press and the ordinary methods of rendering wax will answer perfectly well for those who have only a hundred pounds or so.] E. R. R.

[Now, I too want to say a word about sliding a flat cover on the hive. This thing was talked of by patent-right venders more than twenty years ago; and when the hives were *new*, say during the first season, the whole thing worked beautifully. Just visit the same apiary, however, say three years later, then how do the sliding covers work, with every thing covered with wax and propolis—covers and hives, perhaps, warped and twisted? Why, it worked exactly as friend France has said; and I confess that my experience with such arrangements was such that I began to feel bitter and sarcastic toward any one who *talked* about such an arrangement. Now comes the point that makes this difference in testimony. Of late, an *eight-frame* hive is getting to be fashionable. The cover is narrower and lighter than any thing we have had heretofore. Another thing, these boys have gone and banished, or pretty *nearly* banished, the burr-combs and bits of wax that used to daub the covers, tops of the frames, and every thing else. If the hives are made nice and accurate, the bee-spaces just right, and kept so, I begin to have faith that the careful bee-keeper may *keep* his covers and the tops of his frames so clean that he can, even after five years of use, slide the covers on without killing a bee—at least, I hope so. But there will have to be a big reform, I tell you, in a good many

apiaries. How many are there who have hives that have been in use for five years, where it is practical to slide the cover on without killing or rolling up bees? Raise your hands, please.

Friend F., I want to congratulate you on your keen, sharp observation and common sense in having exploded that old humbug about feeding bees a chicken. How stupid we have been all these years! Now, is it not possible, that, after the mice had worked in the wheat, the bees also used the bran? The strong moral is, that mice should *never* have access to a hive of bees at all; and stores of sugar syrup are probably cheaper and safer than *wheat*, or *chickens* either.] A. I. R.

PROTECTION VS. NO PROTECTION.

A VALUABLE EXPERIENCE.

Friend Root:—In the spring of 1890 I concluded to test thoroughly the advantage of spring protection for single-walled hives. My bee-yard is laid out in three circles of 50 feet diameter, with a smaller circle within the large ones. The hive-stands holding two hives each, are placed around these circles, 16 on the outer circle, 8 in the inside smaller one, and all facing outward. This is the most satisfactory arrangement I have ever tried, as it gives a distinct individuality to each stand. In setting out the bees in the spring, I selected one of these circles and filled the 24 stands with 48 of my best swarms as nearly equal in quality as possible. I then took lath and made 12 handsome outside cases large enough to set over two hives, with four-inch space on all sides for packing, and six inches on top. I placed one of these cases on every other stand, leaving one half of the hives unprotected. The cases were then filled neatly with excelsior sawdust from the section machine. There were double bottom-boards, and bottom protection to the packed hives. The cases were made in four pieces, so that, by tacking four small finishing nails, one in each corner, the whole case could be knocked down in a moment, and laid away in the flat when not in use; and when the 12 stands were packed in their neat cases, and securely covered with a waterproof roof, I said to myself, "Well, this is just splendid." The 24 other hives were left entirely unprotected, except that each hive was covered with a shallow rim three inches deep, with building-paper nailed on one side for a bottom. Each of these shallow boxes was filled with sawdust. A square of burlap was spread over each hive, the boxes set on these, and covered with a good roof. The spring was excedingly cold and late—just such a one as would give spring protection its best chance to prove its value. I then gave watchful care to all alike, and awaited results with great interest. I resolved at the start that I would let all those bees swarm naturally, and then keep strict account of the time of swarming as well as the honey produced by each class of swarms. They all did swarm somewhat late, as the season was the poorest for honey in all my 45 years' experience.

I will not lengthen this article by giving details of the results of this experiment. It is sufficient to say, that, while the cost of material for making the cases was only 25 cents each, and the work of making them was not very great, yet the increased result was not great enough to warrant this small outlay. I shall try the same experiment with some new ones again this year, and again note results. But my present impressions are, that plain hives, cellar wintering, with spring protection in the shape of warm bottom-boards, and warm covers for the top of the hives, are the thing. The bottom is where the cold enters, and the top is where the heat escapes. Both of these points should be carefully protected. My observation has led me to fear that the danger of enticing the bees to leave their warmly packed hives on unsuitable cold days, and perishing in the cold winds, will counterbalance all the good they will do.

BARNETT TAYLOR.

Forestville, Minn., March 23.

[Look here, B. Taylor. You have given us the result of a very valuable experiment just now; but as you prepared your bees, I am sure they all wintered pretty well; for, in fact, both those that were chaff-packed and those that were not, were in very good good shape for winter. You have omitted to say to our readers that you have them in these shallow half-depth frames; but the fact is, in those shallow brood-chambers, with a good warm bottom-board, and your chaff packing on top, you really have a pretty good chaff hive; and I should not wonder that, with such good protection for both top and bottom, and then allowing the sun to strike directly on the sides of the hives whenever it shines, we shall have an arrangement pretty nearly as good as a regular chaff hive.]

BEE-ESCAPES.

THEIR REQUISITES, USES, AND ADVANTAGES.

During the season now rapidly approaching, many bee-keepers will use the new bee-escapes who have never tried them before. The horizontal escape has passed the experimental stage, and is an accomplished fact; and of its uses and advantages there is no longer any doubt. When I invented the horizontal escape I discovered a *system* rather than any particular form of escape; and when I look over the many catalogues now advertising the "Dibbern" (or horizontal) bee-escapes I often wonder what they are really like. There seems to be a general disposition to simplify and cheapen every thing used in the apiary, and the bee-escape is no exception. Indeed, I expect to greatly simplify it myself the coming season; but past experience has taught me that it is entirely safe to "go slow" in the matter. The pear-shaped escape between metal sheets was entirely successful last year, and I shall make no radical changes till something better, simpler, and cheaper has been fully tested.

I fully believe this to be a great invention, and I want all bee-keepers to have the advantages that it secures; and all are free to make, or buy them where they please; my only concern is, that escapes sent out under my name should be rightly made, and give good satisfaction. With this idea in view, it seems to me it would be well at the present time to give a few of the requisites of a perfect bee-escape.

The first thing required is the escape itself; and it should be so made that it will fit into a board without any projections, and no empty boxes or supers should be required

The next thing is the escape-board, to cut the bees in the super off from the main hive. This should be made of boards not more than half an inch thick, and should be provided with bee-spaces, so that, when it is placed under the super, there will be a bee-space on both sides. The escape should be removable from the board, so that a piece of board can be substituted for the escape when desired. There must be neither brood nor queen in the super, or the escape will not clear it entirely of bees. If a wood-zinc honey-board is used, there will be no trouble on

this point. The escape should be made with not too many or too large openings, as the bees are no fools, and readily find their way back through them where there is a fair chance. The escape should also be so placed that there will be no more than a bee-space under it, for the bees to cluster in, for I have learned that, where they can cluster on the cone, they are much more apt to find their way back through it. I have also found that bees can not cluster and hang on to a piece of smooth tin as they do on a wire-cloth cone. If cones are made of wire cloth I would place them on the upper side of the board, with a piece of tin, with small holes punched in it, for the bees to pass out, for the lower side. This is a form of escape I shall experiment with this season. I have many other experiments in view on this line, having no less than a dozen forms of escapes ready to try as soon as there is any chance to test them.

I do not see that there can be any doubt as to the advantages of the bee-escape. It makes it not only easier and pleasanter for the apiarist, but irritates the bees much less than any other method. The escape-board can be slipped under the super in less than a minute, and the bees will escape into the super or hive below, so gradually and peacefully that they do not seem to know what has happened. Cases can be placed over the escapes, and in a few hours the honey can be carried away without disturbing the bees from their work in the least.

The escape is particularly useful in the management of out-apiaries. Last fall, when I got ready to remove what honey there was in the supers at my out-apiary, I found that robbing was "just fearful," as there was no honey coming in; and as I had neither shop nor honey-house there, I hardly see how I could have managed without the bee-escape. I was digging a "bee-cave" at the time; and as I had many other things to look after when out, I had to make good use of my time. When I got out there in the morning I would place these escapes under as many supers as I could haul in my light wagon, and then go about my regular work. When I got ready to go home I would load up my honey, with scarcely a single bee to bother. Once I placed the escape-board under a super that had a small knot-hole in it, that had escaped my attention. A few hours after, I heard the shrill note of the robber, and soon found that the bees were robbing through this knot-hole, there being no longer any bees there to defend it. I fully believe that the escape will prove as valuable for extracted as for comb honey. What we want is to get the "hang" of the proper management. Last year some of our California friends objected, on account of the honey becoming too cold if left over night on hives over the escapes. But, why not put the escapes on in the morning, and at intervals during the day, so that there would be a succession of supers that the bees had just vacated? The sun, which I believe nearly always shines there, would certainly keep them warm enough. Of course, the bee-escape presupposes a super of some kind; and such bee-keepers as remove their honey in single wide frames or sections, like Doolittle, will not find much use for them. It is not strange that all bee-keepers do not take readily to the bee-escape. When we remember that we are not at all agreed as to the advantages of comb foundation, the extractor, and many other things, it is not to be wondered at. All the same, the bee-escape has "come to stay," and many who are now shaking their heads will "come into the agency" by and by.

There is yet another use for the bee-escape besides removing the surplus, that is, in hiving swarms, that promises good results. Last year I tried a sort of combination Heddon-Tinker bee-escape system, that pleased me greatly. I simply hived the swarm on the old stand and removed the partly filled super to it from the old hive. I then put on the escape-board, with escape in place, and the old hive on top of that, giving them a small entrance of their own. I would leave it there for seven days, during which time bees were constantly escaping to the new colony. On the seventh day the old hive was removed to a new stand, and a hive-cover laid on the escape-board, still leaving the small entrance for the returning bees to enter the bee-space under the cover, and escape to the new colony below. To my notion this works much better than the Heddon system, as you are not required to shift the hives every day, and having them standing around in all sorts of awkward positions. Then, too, the bees from the old hive are never at a loss to know where to go, and the old hive is so reduced in bees that the chances of any further swarming are very small. Perhaps there are yet other uses for the bee-escape. Time only can tell.

Milan, Ill., April 1. C. H. DIBBERN.

[Years ago, neighbor Dean and myself rode 20 miles to see a house-apiary all complete and in running order. The thing seemed to work very well, with the exception of the difficulty of taking honey from the bees. During that whole twenty-mile ride we two talked the plan over, with the view of getting the honey away from the bees, without shaking or brushing them off. My neighbor thought it might possibly be done by waiting until cold weather drove the bees out of the supers. He said he didn't believe it could be managed profitably in any other way. I presume such a thing as a bee-escape was at that time used to some extent; but we did not think of it, or did not know one could be made to do the work that they are now doing. Who knows but that bee-escapes may finally revive house-apiaries? I suggest in the A B C book, that one might have a hive of bees in one corner of the pantry, letting them go out through the wall of the house. Then the good wife can take a section of honey right out of the hive, and put it on the table, provided she can get it without *getting the bees also.* Can't a bee-escape be arranged so as to accomplish this?]

RAMBLE NO. 40.

BEE-STINGS AND RHEUMATISM.

While upon my travels I have found many people afflicted with the various phases of rheumatism; and many of the cases that have come under my observation have really been of such a nature as to call out all of my sympathy. Rheumatism that will draw the limbs out of shape, making great knots on the muscles and joints, and inflicting constant and torturing pains, and rendering the patient as helpless as a child, are cases that we can not think of but with sorrow; and in their presence the joke about bee-stings as a cure for rheumatism would not be spoken; for nothing but the divine hand of love could ever make those limbs straight.

One of these rheumatic cases, who had enough, but not of the severest kind, has been known to the Rambler for several years.

I will, with the aid of the camera, introduce you to Mr. John I. Finch and his apiary in North Greenwich, N. Y. Mr. Finch is a blacksmith by trade, and for many years wielded the hammer industriously in the little shop by the roadside. But rheumatism gradually slackened the blows upon the anvil, and active work was suspended. His attention was thereafter

directed to bees, and he now has about thirty colonies, which he thinks is about enough for a man to care for who is obliged to get around to all of his work upon crutches.

Mr. F. has had his ups and downs in the bee-business, having the usual yields and the usual successes and losses in wintering, and, on the whole, for the number of colonies and the disadvantages under which he labors, he has been quite successful. His colonies are run for extracted honey, and, with the exception of a few in chaff hives, they are wintered in the cellar. Though Mr. Finch has manipulated bees for several years, and has been stung an immense number of times, his rheumatism shows no sign

JOHN I. FINCH AND HIS APIARY.

of abatement. He had heard so much about the cure of rheumatism by the sting remedy that he has been careful to watch the effect. A few stings have no effect, except the usual smarting and pain; but a large number, in his case, caused nausea, which is not an uncommon feeling with those having no rheumatism. Mr. F. said that the sting of a single white-faced hornet is more effective than a dozen bee-stings, and he attributed it to the depth to which it is plunged, and thinks that *Apis dorsata*, or some bee with a sting that would penetrate half an

BEE-STINGS AND RHEUMATISM; THEIR APPLICATION AT BED-TIME.

inch into the flesh would possibly effect a cure. A bee-sting, he thought, might cure a local rheumatic pain, but his case was over too much surface to be thus affected.

After studying Bro. Finch's case, several others came to mind. A friend was greatly troubled with local rheumatism under the shoulder-blade; but after keeping bees a few years the rheumatism disappeared entirely; and, though the stings were never applied directly to the spot, he sang the praises of bee-stings at all times and on all occasions, claiming that it was only necessary to get the poison into the circulation. Our neighbor's wife, hearing of this remarkable cure, sent to the Rambler for bees in midwinter. Remonstrances

APPLICATION OF BEE-STING.

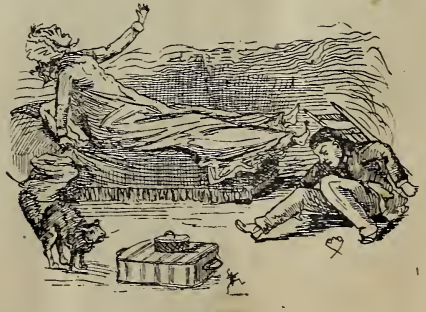
against disturbing the bees at this time were of no avail; and seeing it was a case of life or death, the bees were procured and placed in a cage, and directions given to apply one at a time upon retiring. As usual, directions were not followed, and the whole dozen were let loose at once. From accounts received from the family next day, I make the following sketch; and if not literally true, it must approach it, from the nature of the elements employed. The next day she sent for Warner's Safe Cure.

Another case reported is where a lady who was afflicted with rheumatism in the foot. She had read Jno. Nebel & Son's advertisement in relation to their rheumatism bees, and, having nothing else to think about, a neighboring bee-keeper was sent for, and anxious inquiries were made about the qualities of the Nebel bees over others for the cure of rheumatism. The neighbor argued that his bees were just as powerful as Nebel's; "And," said he, "a sting is a sting, whether in Mexico or Canada, or on High Hill, Mo.; and to prove it I will run over and get a few bees and cure your rheumatism."

The bees were produced; and the patient, being nervous at the approach of the test, timidly asked the neighbor whether the sting of a bee hurt much.

"Oh, no!" said he jocosely; "just a little smart, and all is over. Just keep calm. My bees are just as good as Nebel's."

The application was made, and the result, as the sketch will show, was highly satisfactory to all parties concerned, and has not ceased to be the talk of the entire neighborhood, even unto this day.



RESULT.

I am happy to see, however, that Bros. Nebel have dropped the rheumatic attachment to their advertisement this spring, and it is fortu-

nate they did; for it stirred up a terrible rumpus among the nervous rheumatics; and, as far as learned, but little good has been accomplished, and the cure of rheumatism by the application of bee-stings is a skeptical point with the

RAMBLER.

[But, friend R., why didn't you tell us whether the bee-sting cured the woman's rheumatism or not? The picture tells us all about how your neighbor got piled up in a heap; but after things were restored to rights, the cat soothed, and the bees had got out of the room, was the rheumatic ankle any better, and did she look happy and thankful, just as she does when the application was being made? It is true, you say, in a sort of general way, in your concluding sentence, that you are skeptical in regard to the whole matter, and may be that is intended to answer the question.]

CHIPS FROM THE FEB. 1st NUMBER.

BY WOODCHOPPER.

R. M. Reynolds is right. Queens will lay in supers just as soon with 2-inch sections as with 1¼. I have tried both.

Bait sections (page 83) may prevent A. C. Tyrrel's from swarming, but they don't have any effect that way on mine.

Tell Rambler to go ahead and develop the best bee (see page 83), and the rest of us will be ready to help reap the results.

Yes, Quinby did invent tin combs, but the bees would not use them. They were not ready for metallic caskets then. Are they yet?

Dr. Miller, why are bees better broodless in February? Nature sets queens to laying shortly after Jan. 1st, sometimes sooner. Doesn't she know what's right?

WIDTH OF TOP-BARS.

You are right about the width of your top-bars, but I would space an eighth further apart. I have used thousands of them, and they go in and out much better.

EXTRACTED HONEY FROM DARK COMBS.

Dark combs do affect the color of the honey, friend Andrews (see page 98), if it remains in them long; and if bee-bread is stored in them it will make the honey rank.

LEATHER APRONS.

Tell Emma Wilson to make aprons of leather, as a blacksmith does; and it would look all right for E. R. too; and light calfskin makes the best glove. It must be smooth, or bees will sting through it.

SHINGLES FOR HIVE-ROOFS.

These are much the best of any thing I ever tried, costing less than any other good roof, and making a neat job. They will last 20 years or more, according to quality. Tin lasts well; but it gets so hot if the sun shines on it that it makes a regular furnace of the surplus arrangements under it.

OUT OF THE BUSINESS.

J. T. Fletcher, page 97, is liable, with some others, to find himself out of the business some fine spring morning, as I have seen a number of others do. When we have a really severe winter, the chaff hives will winter bees, and the outer cases will prove failures. The last three winters have been no real test.

HONEY FROM KEGS OR BARRELS.

I never saw any first-class honey come out of a keg or barrel if it had been there any length of time. It is much better in tin cans. Perhaps the New Yorkers prefer their honey half soured, which it is pretty sure to be in wooden packages. I have several times bought honey in kegs and barrels, but I never got any that was really fine.

CLOSED-END AND HOFFMAN FRAMES.

I used closed-end frames 15 years, and I like them first rate; but I discarded them for hanging frames because they were not good to winter in on summer stands. I did not use them inside of a hive, but let them form the ends of the hive. There was no trouble about propolis; and for interchanging they can not be surpassed, if they are made right so as to space 1½ inches apart.

PAINTED MUSLIN VS. SHINGLES.

I tried painted muslin on a few hives some years ago, but it was not worth the cost. It lasted about six years. So far as the muslin is concerned, it doesn't cost very much; but, oh my! as Uncle Amos sometimes exclaims, what a lot of paint and time it took! I had to paint about six times before I got them water-proof; and a gallon of paint would cover only about two hives—just the roof.

CLOSE SPACING, ETC.

Say, friend Scothan (page 100), do you charge your good yield of surplus and heavy hives for winter to close spacing? or did the clover and basswood pan out better than ours? and that nice field of buckwheat, didn't it help to make the hive heavy in the fall? If the close spacing did it, we'll space up tight after this, for we got no surplus, and some of the bees didn't have any thing to winter on, and we had to double up and feed, etc.

SELLING SECTIONS BY THE PIECE.

Friend Whitlock, that is a sharp trick of the grocer, buying by the pound and selling by the piece, and so make two profits; and are we as producers going to allow it? First, we have to buy more sections, put in foundation, then it is more work to crate them; and when we are done, what are we but partakers of other men's sins, for most of them sell them for pounds? That little shortage in weight is the reason they don't want to weigh them. Isn't it time to call a halt before we all get to selling short-weight goods?

SPRING DWINDLING, AND THE CAUSE.

I think E. S. Fowler, of Bartlett, O., is partly right about spring dwindling. There is another cause more frequent. It is this: When we have a long cold spell of weather, say two months or more of downright hard freezing, then, unless the bees are in warm hives, their constitutions are used up in the endeavor to keep up the necessary heat in the hive; and if they don't succeed in it they get cold and go into dysentery, which I call "cold-weather dysentery," and very different from that caused by poor honey, but nearly as fatal, as they die off as soon as they begin work in spring, simply being worn out by being obliged to fire up so much in cold weather.

REMEDY FOR BLACK ANTS; HOW TO GET RID OF 'EM.

If they are the large ones, get a cent's worth of tartar emetic and mix about a quarter of it in a little honey (about an ounce or two), and place in their haunts. After they have eaten it you will see no more of them for about three or four months, when they will begin to come back. A second dose has cleared our house for three years. It will not work on the small ants, for they won't eat it; and if the coal tar (page 101) will clean out the small kinds, then with both you can be "ant clear," both in the hives and the house. This recipe came from the *Housekeeper*, Minneapolis, Minn. Don't let the bees eat it, for it may lay them up till the harvest is over.

THE WILEY CANARD.

I should have supposed that our friend Prof. Cook would have known that he might expect to raise a buzz of indignation at a convention of bee-keepers by giving that wiley (liar) a chance to put himself on record against the honey interests again, and then he goes to apologizing for him, and says he has done lots of good in other departments of science. He will never be able to undo the mischief he has done the bee-keepers of America, even if he lives to be 100 years old. The story of the machine-made comb honey is still traveling. Only three months ago I went into a grocery in a neighboring town, and the proprietor said he was selling honey made without the aid of bees; and when I asked him where he got it he said in Cleveland, and of a certain commission man, naming a well-known honey-dealer. He said that said commission man told him that the honey was not bees' honey, but manufactured by machinery; and he took it all in dead earnest, and told his customers the same story, and it took a good deal of talk to get the idea out of his head; and then I could see that, like the tree that is dug up, the small roots were still there, ready to come up again as soon as the weather was favorable.

Now, if this does not find the way into the waste-basket, I may send another basket for the next fire if chips are good kindlings.

WOODCHOPPER.

[Well, well, Mr. Woodchopper, if you can do as well as this every time we hope you will send us more baskets of chips. They are too good for kindling-wood.

Never saw any good honey from kegs and barrels? What were the barrels made of, and what had they previously contained? Cypress kegs, and oaken alcohol-barrels give no taint to the honey—at least, so say some of the large honey-producers.

We are glad to get your testimony in regard to painted muslin: but there are some of the other bee-keepers who say the muslin is good.]

E. R. R.

[And I, friend W., want to say that I really felt glad to find some one with large experience and good sound judgment to so entirely agree with myself on so many points. Let me correct you, however, in saying that bees would not use Quinby's tin combs. They used them right along, and no fault was found with them except expense, that I heard of. It is true, the bees did not winter in them: but, you see, when the boys weighed the hives to see how much honey the hive contained, they forgot about the metal, and did not calculate; therefore, long before winter was over, the bees had lots of tin but not a drop of stores in the tin cells.—My experience with kegs and barrels is exactly like yours; also with painted cloth for covers. Shingles are too heavy and untidy for hive-roofs.]

A. I. R.

THE PROPER TIME TO SPRAY TREES.

BY A FRUIT-GROWER AND BEE-KEEPER; VALUABLE HINTS ON THE SUBJECT.

According to my promise to you on my way home from the Albany convention, I will write an article on the above topic. I thought it would be of most benefit appearing on the 1st or 15th of April, as May is the month in which we do the most of our spraying.

The first thing to learn is the habits of the insects we wish to destroy. Apple-trees are sprayed to destroy the larva of the coddling moth. The moth deposits her eggs in the calyx of the apple, or blossom, from about the falling of bloom until 10 or 15 days after. The larva hatches in a few days, according to the temperature; and, if not killed, it begins to eat its way into the fruit. About three or five days after blossoms fall is the best time to spray, and continue so doing for about 20 days, as often as rain washes off the poison. If, after the first spraying, it should not rain for a week or ten days, you will kill 75 per cent of the larvæ.

The curculio does not attack the plum until the fruit is about the size of peas, which, in ordinary weather, is a week or ten days after the blossoms fall. Spray plums the same as apples; viz., with Paris green, at the rate of 1 lb. to 200 gallons of water, applied with a good spraying-pump. Some use the same proportion of London purple on apples; but it should be avoided on all *stone fruits*, as it is liable to injure the foliage.

You will see by the above that it is time and material thrown away to spray trees while in bloom; for, nine times out of ten, the rain will wash away the poison before the larva is on hand to eat it. I have my doubts whether bees can be poisoned in this way. I "don't know" that it will *not* kill them. With such a delicately constructed tool for collecting nectar, I think it highly probable that they can gather what they want, and reject the poison. Paris green is insoluble in water, and I think the bees can easily leave it in the blossoms, and take the nectar. I have heard of several cases of bees being poisoned in that way, but was not satisfied with the proof that spraying caused their death. My apiary is mostly under large apple-trees, and I always spray, just as though they were not there. The poisoned water will stand on hives, alighting-boards, and grass; and if the day is a warm one, I always see a great many bees sipping it, and have never noticed any bad results. I have imprisoned bees loaded with such water, for 24 hours, and they came out lively. Those writing upon the subject should not say, "Don't spray while in bloom, for it will poison the bees," but strive to satisfy people that, by so doing, they will throw time and money away; and if you do satisfy them to that effect, why, that ends it. In other words, show them, not how it will injure *other* people, but themselves. I live in one of the greatest fruit-growing counties of the United States, and I know of but one man who sprays his trees while in bloom, and he wants to kill the moth that lays the eggs, instead of the larva from the egg. The mature moth does not eat either the foliage or the fruit, and I hope we shall make him see it soon. I have yet to find an entomologist who recommends spraying trees while in bloom. We have arrived at a point in fruit culture where we have got to use insecticides and fungicides intelligently, or give up the business. As bee-keepers we must lose no opportunity to educate fruit-growers in regard to their own interests, and by so doing further our own. I raise both fruit and honey, and never lose an opportunity of speaking a good word for both pursuits, and showing their dependence on each other when at our farmers' club meetings, agricultural institutes, county fairs, or elsewhere.

G. H. ASHBY,
Sec'y Orleans Co. Farmers' Club.
Albion, N. Y.

HOME-MADE HIVES.

HOW TO MAKE THEM CHEAPLY.

I think I saw a notice somewhere in GLEANINGS of a dovetailed hive some one was offering cheap made of ⅜ lumber. The editor was afraid it would be "too thin," but I rather like the

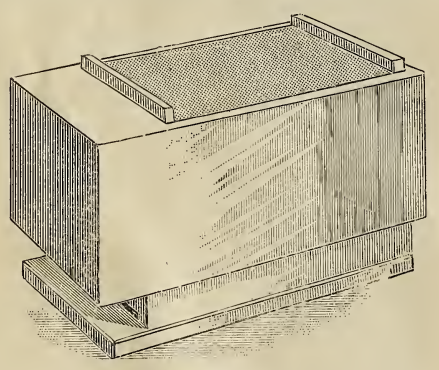
idea. Being made dovetailed, it would be strong enough; but its strongest point would be its cheapness, for I believe the time has gone by when bee-keepers can afford expensive hives. But if the price were the same, I should still prefer them made of thin lumber, say ½ or ⅝ inch. Flat covers of ⅜ and ½ inch lumber are much the best, as they are lighter, and keep their place better, as I have proved in actual use for several years; and this brings me to my subject of

HOME-MADE HIVES.

I make hive bodies, bottoms, and covers, instead of buying, preferring to put money into foundation, as good straight worker combs and sections filled *full* of foundation, I believe, pay every time. I also buy my brood-frames, sections, and supers. The materials are boot and shoe boxes, generally ½ and ⅝ inch in thickness. The best boot-boxes are 3½ feet long, and will cut two lengths of hive stuff, while shoe-boxes are short and will cut but one length, leaving short pieces that will work in crosswise in making bottoms. The boxes can be bought here for 10 and 5 cents apiece for long and short ones. The short boxes, if in good condition, will each make a one-story hive with bottom and cover, and the long ones a two-story hive for extracting. The ends of the boxes being thicker, they are used for ends of hives, rabbeting them for the hanging frame. A rabbet-plane can be bought for 50 or 60 cents; and some little strips can be nailed on so it will cut just the right width, and stop cutting at the right depth. Of course, the stuff

NEEDS NO PLANING

unless you want to plane off the stencil-marks. For my part I rather like to see them; for the slight trace of the letters showing through the paint reminds me of *money saved;* and I take pride in saying to visitors, "See that hive? I made it myself, and it cost me only *five cents* out, except the paint." When I first made them, six or seven years ago, I made them like



A HOME-MADE BEE-HIVE, MADE OF SHOE-BOXES.

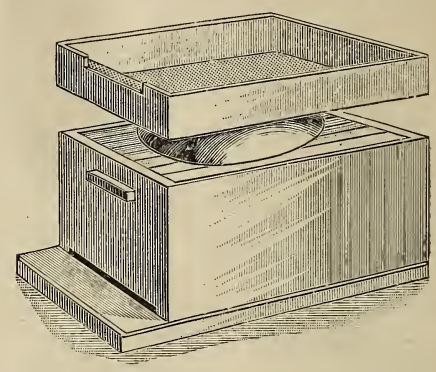
the Heddon-Langstroth, with tight bottom; but I now make them with Dr. Miller's reversible bottom, so as to have upper and lower stories interchangeable.

THE COVERS.

These are made of the sides of boxes which are matched. They are made long enough so they can be reversed, and the bees propolize the joints so they will shed rain. They make a light handy hive for carrying in and out if wintered in the cellar, but I have wintered in them on summer stands with excellent results since 1884, by the following mode of packing for winter: The bees are supplied with six frames containing their stores, with a dummy or division-board on each side. Corncobs are laid crosswise over the frames, instead of the Hill device; but latterly I use the large-sized wooden butter-dishes turned bottom up over the cluster, and I like them much better. A piece of burlap is spread over, and then a thing I will call

THE HILL TRAY

is put on (see cut). I learned the use of this from Mr. Hill, of Mount Healthy, Ohio, when visiting at his home in the fall of 1884. It is simply a light rim five or six inches high, with



SHOE-BOX HIVE, WITH BUTTER-TRAY AND TRAY WITH BURLAP BOTTOM FOR WINTERING.

burlap tacked on for a bottom. He explained that it would fit up in the corners better than a cushion. He used them on old-style Langstroth hives. I find them cheaper, too, as they take less burlap.

After covering the bees with this tray about two-thirds full of chaff, a five-cent shoe-box is turned over the whole. It comes down over the hive usually two-thirds or three-fourths the way down, and so protects the hive a good deal. They are always longer than the hive, so they are put up close behind, and left sticking over in front. This gives a chance for ventilation through the hole covered with screen in the front end of the tray. It will be seen that this makes but little additional expense in preparing the bees for winter, and but little packing material is used. One thing I will mention that I consider essential to success in wintering outdoors in this latitude, and that is—*old combs.*

Oberlin, O., Feb. 21. CHALON FOWLS.

[Hives made of thin stuff had a run some 20 or 25 years ago. They were discarded because they were so liable to injury, and most of us thought they were not as efficient protection against the frost as hives made of inch lumber. Some 12 or 15 years ago I revived the idea again with what I called the "hoop" hive. These had covers ⅜ inch thick. But every little while somebody would sit down on these thin covers, and smash them in. They also troubled me by getting split and coming to pieces. I decided that they were not as good weather protection, either in winter or summer. I have made some very pretty bee-hives from boxes bought at dry-goods stores; but unless one has much spare time to pull them to pieces and get the nails out, and considerable skill and ingenuity in making things work together, I decided it did not pay. Now, in contrast with the above, I have several times thought that thin hives, sitting right in the sun, work better, especially in the spring of the year, than thick ones. Such hives will certainly answer very well, for many of us have tried them when we could not get any better.]

BIOGRAPHICAL.

JAMES A. GREEN.

Seest thou a man diligent in his [bee-keeping] business? He shall stand before kings; he shall not stand before mean men.—PROV. 22:29.

James A. Green, the subject of this sketch, while still in his teens decided to make the road leading through the apiary his royal road to fortune. Giving to his chosen profession the close study and hard work always necessary to make a success of any profession, bringing to it the stimulus of a decided taste for bee-keeping, and a natural aptitude for its details, he is likely, before he is much older, to find "plenty of room at the top."

Mr. Green was born about thirty years ago in the little town of Dayton, on the banks of Fox River, in Illinois. While he has built up an extensive business and quite a national reputation among bee-keepers, this town always has been and continues to be his home.

JAMES A. GREEN.

His practical experience with bees began in 1878, during the absence of his father, who was at that time a bee-keeper on a small scale. Swarming-time came on, the colonies needed attention, and James and his mother stepped promptly into the breach. All went well with the experiment; and when Mr. Green returned from Colorado the boy had found his vocation.

He began with twenty swarms in old-fashioned box hives. He found it hard to gather information about his new business, and, for lack of this knowledge, carried it on for some time in a primitive way, which the modern bee-keeper would consider very antiquated indeed. But James was a very determined boy, and he did not believe there was any need of standing still or going back because the way ahead looked rather difficult. So he diligently read on, gathering from books and magazines some knowledge, and a little insight into the ways of bees. At last, in the A B C of Bee Culture he found the solution of his difficulties, and the best and strongest of foundations for a novice in bee-keeping to build upon. The A B C of Bee Culture very wisely assumes that the beginner knows as little about his future work as the child does of written language. So he, like the child, is required to begin with the alphabet, and when he has gained a thorough mastery of this he is also a long way on the road to the mastery of the bee-profession.

James learned his A B C's thoroughly, and henceforth his upward path became comparatively easy. "Progressive and determined" make a very good combination, and this boy had both qualities. Gradually the old-fashioned methods and appliances gave place to new, improved, and scientific ones. The ingenious hand of the master of the bee-yard supplemented his tools with handy contrivances of his own, and the apiary grew and grew until now, 1891, it numbers 300 colonies, and the sale of its product goes to many of the great cities of the country.

More than this, while Mr. Green is still, and always will be, a student, his knowledge of bees and their culture is so wide, accurate, and practical, that he takes rank among the best authorities in these matters. His name was recently sent in by the secretary of the Smithsonian Institute for admission to one of the great scientific societies of France—a high honor for so young a man who has been only eleven years in the work.

Back of every good man is a good mother. Back of nearly every successful man is a sympathetic mother or wife. Mr. Green is not an exception to this rule. From their babyhood, Mrs. Green took an interest in all that her boys cared to do — an interest no less wise and thoughtful than it was devoted. Each boy felt that mother was his particular partner, giving an intelligent appreciation to all the details of his boyish plans for the future, and sympathizing with all his ups and downs. When Frank, the chemist, hid his beloved bottles on the high shelf of the dining-room cupboard, mother did not scold, nor ever ask to have them taken away. She only told Frank to be very careful how near he placed them to the eatables. When Kent, the bookworm, buried his face in the dear volume, and shut out all the world beside, she found out what he was reading, and, just as much as her busy life would allow, read with him. When Jimmy began to work among the bees, she armed herself with veil and gloves, and went with him. And she has read so intelligently the books and magazines concerning the honey-bee—she has studied so carefully its habits—that she is very good authority on the way of making it profitable to its owner. So that it is certainly true that Mr. Green owes much of his present standing in the profession, and his success financially, to his best friend, his excellent mother.

Mr. Green is not a man of one idea solely, nor does he believe in moving in the rut of one's own business. As an extensive and successful bee-keeper, he has been honored by his brethren with the vice-presidency of the Northwestern Bee-keepers' Association, and it is needless to say that he fills the office well.

A justice of the peace in his native town, his office gives him the power to bind in one two loving hearts.

A graduate of the Ottawa High School, he has supplemented an excellent education by a course of careful and valuable reading. A lover of, and also a judge of first-class poetry, Mr. Green has many an apt quotation at his fingers' ends, and he gives them on suitable occasions with point and grace.

This love of choice and thoughtful reading led him very naturally into the Chautauqua Liter-

ary and Scientific Circle, of which he is a very faithful and conscientious member. He belongs to the class of 1892, and has for some years been the president of the Ottawa Laurels (C. L. S. C.). Mr. Green is an enthusiastic amateur photographer, delighting in flash-light pictures, in which branch of photographic art he has made some good hits, and is marching onward to perfection.

Best of all, he is a quiet, earnest, working, every-day Christian; a member of the Congregational church in Ottawa, and president of the Young People's Society of Christian Endeavor, he is letting his "light shine before men."

Take him all in all, and viewed through the medium of other eyes more impartial than those of a cousin, James A. Green, besides being a live, progressive bee-keeper, is undoubtedly a very nice young man. LYDIA STRAWN.

Ottawa, Ill., March 18.

[My good friend, we feel greatly obliged to you for all these things you tell us about our valued contributor James A. Green. While much of it is new, we long ago decided here in the office that friend Green was a young man of no ordinary merit and acquirements. In fact, he now stands among the chosen few whose copy goes straight to the printers without reading. But, my good friend, will you pardon us if, while reading the above excellent encomium, our thoughts would keep wandering from the subject of the discourse to the discourser herself, especially when you speak with such touching pathos of the part the *mother* plays in this great machinery of human affairs and human events? It was *my* mother who first took me by the hand and led me to the garden on the hillside, and taught me to look for the beets and radishes that were just peeping out of the ground. Then she led my thoughts to Him who holds all these things in the hollow of his hand. She also led me to the bee-hives, little dreaming, perhaps (like many another mother), of what the outcome would be. If it were anybody else than friend Green, such kind words might be apt to make him proud; but then, you know, he is a working Christian. Who can tell all that is compassed and comprehended in these two simple words, "working Christian"? May God bless the words of this short sketch; and may they prove an inspiration, not only to the *boys* and *young men*, but to the *mothers* of our land, young and old.]

POISONOUS SNAKES, ETC.

SOME "SNAKE STORIES" BY PROF. COOK.

I am reminded by subscribers for GLEANINGS that I have not yet written the promised article on poisonous snakes, and so I will defer it no longer, especially as it is a subject of unusual interest to all.

As is well known, we had, thanks to GLEANINGS and its readers, several rattlesnakes last summer in confinement and under observation, and with them we had two or three copperheads and one highland moccasin, or cottonmouth. These snakes are very interesting, as being justly the most dreaded enemies of man. Their concealment, readiness to bite, and the terrible nature of a wound from their fangs, make them peculiarly interesting.

All of our poisonous snakes have broad, flat, triangular heads, and two curved movable fangs in the upper jaw. These are either hollow or grooved, and connect with a poisonous sac in which is stored the venomous liquid which is so much dreaded—justly dreaded—as it is a deadly poison. This is said to be safe if taken into the stomach; but once introduced into the blood it brings severe pain, paralysis, and death. When a venomous snake strikes, it straightens its fangs at the same time; and the same muscles that raise the head and extend the fangs also compress the poison-sac, and extrude the poison. It is said by some authors that the snake may strike without extruding the venom. I do not know that this is not so; but I do know that they often throw drops of poison when they strike, even though they may not bite at all. Last summer our moccasin would strike at a stick, and we often saw the venom fly, and also saw drops of poison on the stick.

In the form of the head and structure of the biting apparatus our poisonous snakes are like the same of the Orient. But all *our* poisonous snakes have a deep pit on the outside of the head, between the eyes and the nasal opening or openings of the nose. This pit is absent in the venomous snakes of the Old World. Our poisonous snakes, then, are easily known by their broad, flat, triangular heads, movable poison-fangs, and the pits between the eyes and opening of the nose. These are the only ready means to distinguish the copperheads and moccasins, while the several species of rattlesnakes are further marked by the conspicuous rattles that adorn their tails. These rattles are simply overlapping ring-like scales, which are connected some like the swivel link of a log-chain. The rapid vibration of the snake's tail causes these scales to move on each other, and produce the peculiar whirr which gives the common name to these venomous reptiles. It is a very curious and interesting fact, that the copperhead will vibrate its tail against a board, stick, or box, so that one could scarcely distinguish it from a real rattlesnake. We noted that specially last summer.

The only poisonous snake we have in Michigan is the massasauga, or prairie rattlesnake. This is short, heavy, dark in color, and beautiful neither in color, form, nor habit. Usually this snake, like the other venomous species, coils when it strikes, but not always. It will strike if circumstances prevent its coiling. The young of our massasauga are born alive—that is, the eggs hatch within the mother. Such snakes are called ovoviviparous or viviparous. I think all of the venomous snakes are like these in their reproduction. The young massasaugas, when very small, will run, as I have witnessed, when danger threatens, into the mouth of their mother. It hardly need be said that they seek a very safe place.

Rattlesnakes are grouped in genera from the peculiar arrangements of the plates on the back of the head. Thus our massasauga belongs to the genus *Caudisona*. It is *C. tergemina*. There are two other species of this genus in the southwest of our country.

The rattlesnakes of the East and South are longer, slimmer, and handsomer than the massasauga. The large eastern one is *Crotalus horridus*, and is aptly named. They vary from yellow to black, and are marked with spots, so that often they are quite handsome. They may grow to be four feet long. There are several species of this genus in the South, Southwest, and West. One, *C. adamanteus*, or diamond rattlesnake, is very handsome. We had several from the Gulf States last season, and they were beautiful. The color is yellowish brown, and they are ornamented with thirty or more dark-brown diamond-shaped spots. They are slim and graceful, and are objects of great beauty and interest as they strike—that is, if removed at a safe distance from the observer. One of these bit a cat in my laboratory last summer.

The poor cat seemed to be in terrible pain immediately, and in less than two minutes her hind limb—the one bitten—was so paralyzed that she dragged her hind parts. She was in such terrible pain that we gave her chloroform and placed her beyond suffering.

The copperhead is also a handsome snake. It is light reddish brown, spotted with darker brown, and has a copper-colored head. It seems less brainy than the rattlesnakes, for it would strike, or strike at, a stick, and throw its poison, while the rattlesnakes could not be fooled in any such way. They would attack only real game. The moccasin, like the copperhead, was easily tantalized to strike at a stick. It is darker, and not so handsome as the copperhead and diamond rattlesnake.

From our experiment with the cat I can not but believe that these snakes are fearfully venomous. Were I bitten, I would adopt radical measures to effect a cure. If on the hand, finger, arm, or leg, I would tie a string very tightly above the place, and try to keep the poison from entering the circulation. If I could get a hot iron, or some acid, at once, I would cauterize the wound; but it would not do to wait any. Sucking the poison out would always be in order. This is safe, for, as we have seen, no harm would come, even if some of the venom were swallowed, though this would be unnecessary. The advice to drink whisky freely is so stoutly urged that I have only to say that it *may* do good.

THE CHAIN, OR KING SNAKE.

I am indebted to one of your Georgia subscribers, Mr. J. F. McCord, Covington, Ga., for a beautiful chain-snake. This, one of the commonest snakes of the South, is also called king-snake, and Mr. McCord refers to it as the pilot-snake. The scientific name of this handsome snake is *Ophibolus getulus*. We see it belongs to the same genus as the common milk-snake of both North and South (*Ophibolus triangulus*), which it much resembles in form. It is also about the same size, from 25 to 40 inches. This milk-snake is often called house-snake, as it is not infrequently found in cellars and outhouses. Both of these snakes are entirely harmless.

The chain-snake is jet-black, and ringed with narrow yellow lines which fork below, inclosing black spots. Below it is white, spotted with black. The intense black, lined with yellow, gives a remarkably pleasing combination, which, together with the slim elongated form, makes this one of our very handsomest snakes. The negroes are said to regard this snake with respect, and even awe. They claim that it rules the reptile world, and will even attack and subdue the terrible rattler. This is doubtless why they call it the king-snake. The chain-snake feeds on lizards, mice, and other snakes. Like our milk-snakes, this is entirely harmless. It can not do harm, should it attempt to bite; and the probability is, it would never essay to bite. The many teeth, projecting from the jaw and somarine bones, are too weak to do more than hold on to its victim as it attempts to swallow its live and lively food whole. These teeth point back, and so make every struggle of its prey help on the operation of swallowing. I am very glad of this specimen, as I always am to receive specimens from the South. I will always gladly pay express, and shall be very grateful for new specimens. A. J. COOK.

Agricultural College, Mich.

[Some little time ago one of our correspondents asked to have his GLEANINGS discontinued because it was too "snaky." We think, however, that no one will complain in this line after having read the wonderful facts which Prof. Cook gives us. They are all the more interesting to me because I know they are *true;* but if it were almost anybody else than our careful friend, I might be a little suspicious—especially in regard to that startling statement that the young seek refuge in their mother's mouth. Now, I am just Yankee enough to want to ask a lot of questions. Do not snakes breathe? If so, how are those young chaps going to breathe when the mother has swallowed them? and does she swallow half a dozen or so at once? After the danger is past, I suppose they turn around and crawl out again. Do they hold their breath all this time? I have heard this statement before, but I did not believe it. Our proof-reader suggests, however, that you only say they find refuge in their mother's *mouth*. But, dear friend Cook, do you mean to say that the mouth is large enough to give place to a brood of young snakes? The story was told me that she swallowed them to give them a place of safety.]

THE NOISE OF BEES IN THE CELLAR.

DR. MILLER DISCUSSES THE CAUSES.

I wish I could clearly interpret what the bees mean by the noise they make in the cellar. Do they make the same kind of noise at all times? Does a noise *always* mean that something is not quite right? I have thought that, when bees are making a noise because too cold, they make a kind of sharp, rattling noise, different from the noise made when they are warm. Perhaps others can tell better about it. This rattling noise must be made with the wings, for bees have a true voice, aside from the noise made by the wings. Cheshire says the wings make the buzzing, and the humming is made by the interrupted air passing through the spiracles, or breathing-tubes. This latter is the true voice. Landois recognizes a third tone in the flight sound—that made by the vibrations of the abdominal rings. Differently from what might be supposed, the most acute and intense noise is that made by the true vocal apparatus. These three tones are all made at the same time during flight; and, if I understand the matter rightly, they are inseparably connected with the muscular effort made in flying. We all know very well the difference there is in some of the sounds made by a bee on the wing as it leaves the hive or returns heavily laden, or flies scolding about our heads.

Now, does a bee, or can a bee, make the same variety of sounds in the hive as on the wing? When a colony of bees in the cellar are as quiet and still as if dead, and are disturbed, they always seem to me to make a kind of sleepy sound. If a colony is too cold, it makes a noise. Does the noise make it warm? Hardly. On a cold day a man slaps his arms around him to warm himself. The exercise warms him, and the noise he makes is a necessary accompaniment. Isn't it just the same with the bees? But if the bees get *too* warm they make a noise. Surely, exercise doesn't cool them, does it? If you get too warm, do you go to jumping around or slapping your arms together to cool off? Well, you may use a certain kind of exercise to cool off, and that is by plying a fan—precisely what the bees do, only I suspect that, generally, the only feeling they recognize is a desire for purer air. Dzierzon intimates that the main reason why bees are noisy in cellars is because of impure air. If cold, do they ever get *very* noisy? But when warm, they do get very noisy.

It is generally believed, and I think it is correct, that, in summer, bees keep the air in their hives pure by ventilating, and it is the same, I

suppose, in the cellar. That ventilation is always accompanied by a certain amount of sound, is it not, whether in summer or winter? If the bees recognize the presence of impure air in the hive, the natural thing is to ventilate. If the air in the hive is exactly the same temperature as that outside, and there is nothing to create any motion of the air either in or out of the hive, then, as the air becomes impure by breathing, the bees must necessarily purify it by ventilating. If, however, the air outside the hive is enough colder than that within, the greater weight of the outside air will make it displace that within, so that, if it be just enough colder, there will be no need of action on the part of the bees, either to get up heat or to purify the air. That particular point of temperature is supposed to be somewhere in the neighborhood of 45°, possibly a little above it. This is on the supposition that the air outside the hive is pure.

Now, suppose a colony gets to work ventilating, and the air they introduce is just as impure as that driven out. The effort to change the air will become more violent, until the whole hive is in a roar; and, if the cold does not force them to stay in the hive, they will collect on the outside, just where their instinct tells them they may find the purest air. Just this state of things I have seen many a time on warm, muggy days toward spring. On the evening of such a day, I have opened wide the cellar-door, so as to let in better air. Did that quiet the bees? So far from it, the noise increased so much that the roaring could be heard at a distance of several rods from the cellar. Why? Perhaps the bees had understood that a stock of fresh air had been brought into the cellar, and that now it was worth while to work harder than ever to get some of it while it was going. At any rate, they seemed to go to work with a will; but when they had filled their hives with the precious breathing material, they stopped ventilating; and by the next morning the cellar was almost as quiet as death, and not a bee would stir from the hives, though the full light of day streamed in.

So far, then, we seem to have noise of two kinds—that made when the bees are warming up, and that made when they are ventilating. The noise of cold bees seems a little in the cellar like the sound of a soft wind blowing through the pine-trees. Are there any different sounds?

Are we to understand that, when a colony is somewhat noisy, something is not quite right? I don't know for sure, but I think not. Is it not necessary for a colony, after such a length of time, to make a stir and take a lunch, and, possibly, make other changes? Did you ever notice them rousing up periodically, and then quieting down again? Unless you are quite close to the colony you may not hear it, and it makes hardly a perceptible difference in the murmur of the cellar. So I would say you may find single colonies noisy, without any harm; but if all the cellar is noisy, something needs attention. Now, am I right in all this? Can any one tell us more about it? C. C. MILLER.

Marengo, Ill., Mar. 6.

[This noise in a bee-cellar has always been somewhat of a mystery to me, and I believe your suggestions on the cause are good. There is one thing I feel pretty sure of—that is, if the cellar is above 50 degrees in temperature, and the bees are noisy, by lowering the temperature down to 40 they will become quiet. The only means of lowering the temperature with me has been to open the windows at night. That did two things—let in pure air, and the lower temperature created a circulation. Another thing I have noticed: If the temperature goes down too low, bees are apt to be noisy again. By closing the windows next morning, they would be quiet. As you say, the noise in one case is caused by a lack of ventilation, and in the other the cause was a lack of warmth. Perhaps some one else will argue that the temperature was not right. I have not been troubled much with extreme temperature in my cellar, but I have allowed it to become low in order to see what the effects would be. I have noticed one other thing: That one or two hybrid colonies that we had in the cellar would be making a roar when all the rest of the bees were quiet. I accounted for this on the ground that they were so exceedingly sensitive to a slight disturbance that they immediately entered their protest. These same bees, if outdoors, would have done it in a rather more forcible way.]

E. R. R.

OBJECTIONS TO FIXED DISTANCES.

C. A. HATCH RECOUNTS THEM.

While we are hearing so much about the advantages of closed-end frames and fixed distances, would it not be well to look at some of the disadvantages of them, and the advantages of hanging, or, rather, swinging frames?

Is rapidity of handling the only thing to be considered? and is it really so that the closed-end, or any frame having a device for keeping them a certain distance from each other, can be handled faster than common L. frames? It is said that one can take three frames at one time, and therefore can get along, presumably, three times as fast. Can not three frames of any kind (if one wants to lift so much at once) be taken at one time by putting your fingers between the frames to keep them apart. I have done it many times; but two heavy frames at once are about all the average bee-man will care to lift, and follow it up for any length of time.

If frames having end-pieces wide enough to fill completely the space, like the Quinby and new Heddon hive, I have found it necessary to loosen the frame at both ends, and sometimes they are so glued with propolis that they are fixed indeed; and in the Heddon hive I have had to spoil the first frame in order to get at the rest. Perhaps this may be owing to the frames filling the hive endwise; but suppose a space is left there, what a fine place for moth to hide, or for more propolis to be stowed! When bees bring in propolis and fill every crack and cranny with chunks as large as hazelnuts, and sometimes larger, we have to beware of the chances for storage left around the hive. "But," says one, "we are going to have the frames wedged so closely that no crack for propolis is left between." Can any form of wedge and follower bring them closer than a screw which was used in my case? and what is to prevent that wedge from being stuck solid with propolis? and can you get frames made so square and true that they will *all* come up chock against each neighbor? If you can, you have found a better workman than we have, and we have had some good work done. What is the matter with the round-headed nails recommended by Dr. Miller?

You must always put the frame in the hive the same way it came out, which makes an extra item to watch, and sometimes it is a real advantage to change ends with a frame. The nails are also always catching on the hive or on other frames, and bothering, especially if one wants to handle them rapidly, and that is just the point we are after. We had several hundred frames fixed this way some years ago, but used them only one year, when we removed every one, at no little expense and labor. The

nails are also much in the way about using the uncapping-knife. This last point would condemn them for all extracted-honey men.

The Hoffman frame, which has closed ends only part way down, as I understand it, is perhaps open to less objections; but there are the same ones in regard to being stuck with propolis. What a fine place the V point between two frames is for it! Still, if the frames are wedged close, and fit snug, the part in contact is so short that not much effort will be needed to separate them. It also has the end projection to lift and handle it by, which with me is quite important. If we are to have frames fixing the distances automatically, let us try to get a good one, adopting the Jacksonian motto, "Be sure you are right, then go ahead."

Remember what a boom was made only two or three years ago on reversing frames, and then see how many are in use to-day. Are we not too much like a flock of sheep—when one leader goes, all make a rush, regardless of what we require. C. A. HATCH.

Ithaca, Wis., Mar. 26.

[I am glad of your article, friend H.; and believe me when I say I am just as much pleased to have the other side discussed as to have the one toward which I am leaning; the more so, because I know you are a successful bee-keeper, and candid and fair in your judgments.

I do not know that it is so in every one's hands, that the closed-end or Hoffman frame can be handled faster than loose frames. I know I saw Hoffman and Elwood handle their respective fixed frames faster than the average man will the loose frame. But as Mr. Hoffman in the next issue will touch upon this point and Mr. Elwood in the present issue, I will let them speak for themselves.

Hanging frames with nails for spacers, and such like contrivances, would be an intolerable nuisance, and I do not wonder that you discarded them.

To handle the closed-end or Hoffman rapidly, they should be picked up in pairs, and sometimes in trios. If they are full of honey, two will be enough to lift. If empty or nearly so, in the spring, then you can handle as many as you can span with your fingers. I know you can handle loose frames after a fashion in pairs, but not with the same facility that the Hoffman frames can be thus handled. I have tried both ways.

Those of us who have defended fixed distances did not intend to convey the impression that fixed frames could be handled in speed in proportion to the number of frames handled at once, as you seem to take it. We meant that the handling in pairs and in trios *assisted.*

For rapid manipulation there is another very important consideration. For closed-end or Hoffman frames a hive with a movable side, or, better, one with a loose follower, should be used and then you get lateral movement in its perfection.

Your experience with the Heddon closed-end frame is different from ours, so that we shall have to account for that on the score of locality.

What you say regarding closed-end frames in close-fitting cases may be a serious objection in many localities; and if so, we should be warned of it in advance; but this does not apply at all to the Hoffman frames or closed-end frames, used as Quinby advised.

And now about the propolis between the cracks. We have had no very great trouble on that score. So far, compression has obviated the trouble. But perhaps I should remark right here, that the Italians do not deposit propolis like hybrids or blacks. But in spite of all you say, everywhere in New York I saw every thing smeared with propolis; and if there is any place in the United States where propolis is deposited freely, it is in York State; Elwood says he never saw any more propolis than in his locality, and yet neither he nor Hoffman experiences any trouble from it with their frames. You say, with fixed distances you must always put the frame in the hive in the same way it came out. On this point I just won't agree. This may be true, however, if you take old hanging frames and make them into fixed distances with nails. But take frames that have always been fixed (that is, those that have never been subjected to the hit-and-miss spacing), and have always been handled properly. I am pretty sure there will be no trouble. Notice what Mr. Hoffman says in the following article. Mr. Elwood has told me the same thing.

There was a boom made in reversing, and it rather died out; but I am pretty sure that it is going to come up when the proper appliances permit of its more easy operation. Reversing with ordinary loose frames is impracticable; but with fixed frames inversion is not only more feasible but practicable; and, as friend Dayton said in the last issue, and as Mr. Chalon Fowls and others have insisted, I believe that more brood can be secured in a certain number of frames by reversing than by not reversing. If this is true—and our experience in the apiary inclines me to this opinion—then here is a point that we can not very well overlook. Fixed distances are going to make reversing possible where before it was impracticable (because the whole hive can easily be turned upside down and the combs won't topple over either), and there is nothing that makes such beautiful combs as reversing. I am very glad to refer you to an article from Mr. Hoffman, which appears next; and I would also advise you to read another from the pen of Mr. Elwood.] E. R. R.

THE HOFFMAN FRAME DEFENDED.

HINTS ON ITS MANIPULATION BY THE INVENTOR HIMSELF—MR. JULIUS HOFFMAN.

In GLEANINGS of Mar. 15th, Mr. W. W. Somerford is condemning closed-end frames in quite a severe and positive way. I have but very little time to write, and perhaps still less inclination and ability to do so; but Mr. Somerford's sweeping assertion, and the apparent tendency in his article to warn beginners against the Hoffman frame, induces me to make a few remarks in your valuable paper—unless GLEANINGS has closed its pages to any further testimony on the Hoffman side, as that gentleman calls it.

I will begin by saying that I never made the slightest attempt, in word or writing, to persuade or induce anybody to adopt or use my style of frame until quite recently. When the now so-called Hoffman frame was brought to notice in GLEANINGS I thought it best to state how I make and use the suspended, partly closed-end frame, and tried to explain what I thought their advantages.

What induced the editors of GLEANINGS to bring this frame before the public, I do not know; but I was much surprised, like Mr. Somerford, that my style of frame had worked its way into so many apiaries, even to most of the distant States.

I can assure Mr. Somerford, too, that I know of a good many beginners who started with the Hoffman frame, and are quite successful with it. I also know of many good practical honey-raisers who have worked with the common

loose or swinging frame, and use the Hoffman now exclusively. If Mr. Somerford has used the Hoffman frame as made by me, and described in GLEANINGS, will he please tell the readers of GLEANINGS in how many colonies and for how many years he has used them?

If he is of his friend Woodward's type, who has sometimes to leave the close-fitting frames apart a little, on account of irregular combs, and can not interchange them very well because his combs differ so, and as he can not keep his hives level, the combs are out of true. If he is that kind of bee-keeper it will, I think, be better for him not to handle a spaced or close-fitting frame; or, better yet, work the old box hive. We have, in the working season, from eight to ten thousand frames to handle and in use, and any of them will fit in any colony between any two combs. Is Mr. Somerford not aware of the fact that some of our most practical and extensive honey-raisers have used a close-fitting frame for a great many years? Please ask them whether the frame they use is abominable and unbearable to them.

I have no doubt that these successful men can handle their close-fitting frames quite as fast and conveniently as Mr. Somerford his swinging or loose frame. Has Mr. Somerford ever moved several hundred colonies to different localities and back again every season? If so, will he please tell us how he would fix his swinging frames to load and unload to take his bees to different localities over rough and hilly roads, or take his filled combs home for extracting from the different apiaries as we have to do?

My hired man (I often have a green or inexperienced man to do it) can, and has often done all the moving of the bees to five and six different yards in spring and fall, without any assistance.

If I used a loose swinging frame it would require such an amount of time, labor, and care, to move the bees every year, that I should not want to do it at all. It would be "abominable and unbearable" business, and I would give it up.

DOES THE HOFFMAN FRAME KILL BEES? PROPOLIS; DOES IT HINDER OR ASSIST MANIPULATION?

In regard to bee-glue, I will say that we have no trouble from it with our frames and in our climate, when the frames fit as well as they ought to, and are always pushed together well.

I, indeed, prefer the gluing together of the frames by the bees to a loose shifting frame, as I can lift and carry the hives more handily. I hardly believe that Mr. Somerford gave the Hoffman frame a fair trial; for if he had, he would not say it kills bees.

In examining or working a colony of bees, the frames ought not to be pressed quite close together until the work with that hive is done, when all the frames of the hive should be pressed together firmly in a lot. If a little smoke is used before, to drive the bees down where the frames are not close fitting, no bees will be killed. Any person at all fitted for the bee-business will soon handle such frames without killing bees.

In conclusion I wish to say, that, if a bee-keeper can not become expert enough to handle a close-fitting frame well, he should not discourage others from trying them, because I am certain there are many in our great country who are progressive and clever enough to make a success in honey-raising by using improved appliances or fixtures. JULIUS HOFFMAN.

Canajoharie, N. Y., Mar. 23.

[I will say to our readers that Mr. Hoffman is modest and retiring in disposition, and one who is but little inclined to push the merits of any of his devices. He has no interest in bee-supplies, and, in fact, never had, that I know of. What he says above, I am sure was influenced only by his free-hearted disposition to do the bee-keeping world good. He has used extensively the loose hanging frame, and I think he can prove every statement made, just as he did to me when I visited his place some six months ago. His success with 600 colonies, and his big crops of honey, secured largely by his own individual labor, means something.

The reason why we thought best to introduce his frame was because, here and there all over the country (when we were agitating fixed distances) bee-keepers were asking us to look into its merits. So many of these came in, and they argued with so much show of reason, that this was largely influential in inducing me to make a visit east, to see Mr. Hoffman handle his frames; and the result was, that I was so thoroughly convinced of their merits I knew we should be doing bee-keepers a good turn by offering them to the public.

J. H. Nellis advertised Hoffman frames something like ten years ago; and after his journal ceased publication in 1882, comparatively nothing more was said in regard to them; but it seems they have during these years been silently working their way throughout the country among bee-keepers, solely on their merits. Supply-dealers may boom a poor article, and get it generally introduced; but when an article, without any booming for ten years, works its own way into favor, it must have intrinsic value, or it would die out.

I believe the Hoffman frame is better adapted to beginners than any other frame I know of. They can not help getting their combs spaced right; and I know by experience that beginners seldom if ever space loose frames properly, and then they write to know why bees bulge their combs so badly, or why their combs are so crooked, etc.

In the next issue Mr. Hoffman will show how to handle the Hoffman frame, by an illustrated article.] E. R. R.

THE HETHERINGTON QUINBY HIVE.

MR. ELWOOD TELLS HOW TO HANDLE IT, AND EXPLAINS ONE OF THE SECRETS OF ITS RAPID MANIPULATION.

The junior editor of GLEANINGS has canvassed the subject so exhaustively as to leave little to be said on fixed distances with closed-end frames. I was glad of an opportunity of showing the workings of our hive to a practical bee-keeper familiar with the swinging-frame hive in its various modifications; for I had surmised, as Mr. Root admits, that my statements as to rapid and safe work were, by many, disbelieved. However, I am pleased to know that my advocacy for these many years of fixed distances and closed-end frames, while counted a serious blunder, was attributed to nothing worse than ignorance.

THE TWO REQUIREMENTS OF A GOOD BEE-HIVE.

A good bee-hive must fill two requirements reasonably well to be worthy of that name. 1. It must be a good home for the bees; 2. It must in addition be so constructed as to be convenient to perform the various operations required by modern bee-keeping. The first of these requirements is filled very well by a good box or straw hive. Bees will store as much honey in these hives as in any, and in the North they will winter and spring as well in a straw hive as in any other. They do not, however, fill the

second requirement; and to meet this the movable-frame hive was invented.

WHY QUINBY INVENTED THE CLOSED-END FRAME.

Mr. Quinby observed, soon after the introduction of the Langstroth hive, that bees did not winter as well in them as in box hives, on account of the open frame; and he remedied it by making his frames closed end. Dzierzon also discovered that the open frame infringed upon the welfare of the bees, and says: "These passages are unnatural, and they carry off the necessary heat and moisture from the brood-nest and winter quarters of the bees, so that colonies generally winter badly." Abbott, late editor of the *British Bee Journal*, says: "There is nothing more unnatural in hive arrangement than the absurd practice of making or leaving spaces round the frame ends." Bees usually close up the space between the combs and frame ends or side walls of hives, as far down as honey extends, and undoubtedly our frames should be closed as far down as the instinct of the bees teaches them to close this space, which is often to the very bottom of the frame. This close space saves much heat, and enables weak colonies to build up in the spring that in an open-end frame would have no chance whatever.

Our division-boards, or panels, as we call them, are close fitting at top, bottom, and ends. They are always at hand, thus making it very convenient to contract the brood-nest to suit the requirements of the smallest colony, or to enlarge it to suit the largest colony. With a quilt over the top of the frames, every space between the combs is made so close that it is easily kept warm, and really gives our hive nearly all the advantages of the box hive, with the additional one of combs removable at pleasure.

MOVING BEES ON CLOSED-END FRAMES.

Our hive is portable. No cumbersome rack is needed in moving bees, for two hives sit side by side in the bottom of the wagon, and one hive piles on top of another, without need of sticks between. In preparing a colony for moving, we shove out the entrance slide in the bottom of the hive, and put in its place a wire-cloth slide to give the necessary ventilation. Then two screws are put in—one through each side of the bottom-board into the edge of the hive. An average man will consume about a hundred minutes from the time he reaches a yard until he drives out with a load of thirty-three swarms. The two screws mentioned fasten the bottom on so securely that we have had no accidents on the road serious enough to warrant unhitching the team from the wagon. Our bees are usually drawn over rough, stony, and hilly roads, but we have no queens or bees killed from frames flopping together, nor do we have any combs broken. It is a long time since I saw a comb that had been broken on the road.* When our bees were housed in November, two men in the cellar and three outside with a team put them in at the rate of two colonies per minute. With the swinging frame they could hardly have handled them so rapidly, saying nothing about their safety.

Not only is our hive movable, but our frames are also movable. In walking up to a hive, one motion lifts the hive proper from its bottom-board, and places it at the side of the exposed frames, where it forms a seat of convenient height. The iron roof is nailed to the hive, and, of course, always goes with it. Only in the hottest weather is there a shade-board to be removed. Another motion with one hand removes the quilt covering the frames, and the other hand blows a puff or two of smoke from Jumbo, while the first removes the cord holding the frames more tightly together. You are then ready for business. If you are looking for the quantity of brood in the hive, you can remove the frames in pairs; for they are easily and rapidly handled in this way, and one side of a comb is usually a duplicate of the other side. The bottom-board is large enough so that the frames removed can be hooked on the bottom near you, and far enough away from the others to have ample room to get a good look at the next comb (see Fig. 1).* This is a valuable feature of the hive, as you can have always a good place for combs without setting them upon the ground where you are in danger

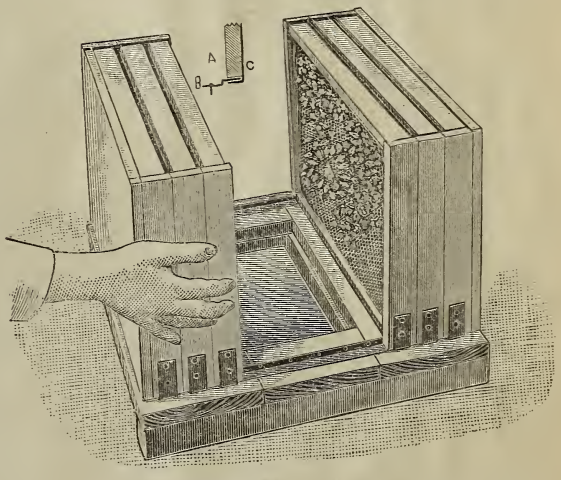


FIG. 1. QUINBY CLOSED-END FRAMES MANIPULATED.

of losing queens and damaging brood, besides other annoyances. The hive-bottom as we use it for comb honey is 18 inches across, while the maximum number of frames used for this purpose would occupy only 11½ inches. In removing frames, a small knife† will readily loosen one end, when they can be unhooked from the bottom. Quite often a knife is not necessary, but it is advisable to carry one.

On looking over combs it is best to set them together on the bottom, see Fig. 1, so that bees can neither get in nor out between the ends of the frames. This is best for various reasons.

*Mr. Root has told you something about our roads, which were at their best when he was here. Perhaps they were not very smooth then, as, on coming down one steep hill, I caught him holding fast to the seat with both hands. This was not when our bees were objecting to having their pictures taken, for his hands were busy then, and I remember that *I* was *on foot*.

*Mr. Elwood several times showed me the queen by simply dividing the hive in *perpendicular* halves, as shown in the engraving. Often this was all that was necessary, and the hive was closed up. Many times he handled and examined into hives without removing a single frame. This is why he often can find a queen quicker than he could in a loose-frame hive in a box.—E. R. R.

†A good penknife will open any hive, and for nearly fifteen years I carried and used exclusively the same light jack-knife, breaking it only in taking off clamps of honey.

In cool weather it saves heat, also annoyance from robbers; and when looking for queens the bees do not bunch up when the combs are the proper distance apart. Also when we have all the combs looked over, they are ready to have the cord and quilt put on them after a shove (with both hands as per Fig. 1) slides them all to the center of the bottom-board, ready for the hive. P. H. ELWOOD.

Starkville, N. Y., Mar. 15.

Continued next issue.

[In the next issue Mr. Elwood will explain why the closed-end frame as Mr. Quinby recommended it does not kill bees. This will also be illustrated with suitable engravings. Mr. Elwood has given very truthfully the two requirements of a bee-hive—one suited to the bees, and the other to the bee-keeper. We all agree on the first requirement, but we do not all agree as to what constitutes the second one. I will say that the engraving, Fig. 1, was taken from a photograph, and is very nearly accurate. The manner in which the frame is hooked to the strap iron is not entirely correct; but this will be illustrated in the next issue, and shown right.] E. R. R.

CLOSED-END FRAMES.

MRS. AXTELL DISCUSSES SOME OF THEIR DISADVANTAGES.

Mr. Axtell has given you his views about the standing closed-end Quinby frames and hive, which features of the hive I like too; but there are some things about it that even I do not like. In the first place, one must be very careful to push the frames up tight each time; and even if they are pushed up tight, the bees will stick on a little bee-glue along the crack that was made when pried apart. Then next time a little more will be put on, and the next time a little more, so that they will unavoidably get further and further apart—that is, spaced further apart unless the apiarist will at least once a year scrape between those combs.

My plan has been to get around once in two years myself, at least, and take down the front of the hive, and, with an old butcher-knife, I pry each comb apart and scrape between the two, then scrape off the front board of the hive, with a scraper and the front end of the brood-frames (I scrape the front end before being pried apart). Then I go to the back end of the hive and take down the board and scrape off the back end of the frames before prying them apart; then I pry them apart and scrape between the combs; then scrape off the board before putting it up.

I have always made it a point, about once in two years, to have the edges between the combs where they come together scraped, and the front board once in one year; and the back board, which is often taken down, scraped oftener. Now, if that scraping is neglected, in a few years an immense amount of wax and propolis would be put in, so that the combs would be spaced much too far apart; and the frames, by the addition of the propolis, would become so long we could not shut up the hive. For that reason, year before last I strained my arms drawing the corners close together so they could be clamped. We are about to fix all our hives $\frac{1}{8}$ or $\frac{1}{16}$ of an inch longer than they were needed when new.

Always, in the fall, we have a large number of brood-frames not needed in the hives, and sometimes they are filled with honey, and often not filled; but I generally take pains to have them all cleaned of propolis between the edges where they come together, as it is very much easier cleaned out of the hive than in the hive, where the bees are constantly poking their heads out in my way, and I have to use the smoker to keep them back.

Now, another serious objection to the standing closed-end frames is especially serious in the hands of our helpers or beginners. At the front ends, if the bees run, they will generally run down at the front end, and get just where we want to set the frame. I can scarcely ever sit and look at one of my helpers replace the combs in the hive, because they will kill so many bees at that front end on the bottom, so there is danger of killing the queen also. Mr. Axtell does not, nor do I, kill many bees in that way; but we are careful not to get them to running, and I know better how to prevent getting them down there; but if they do get down too bad, then we loosen the front board a little until the combs are returned; but in that case the frame must be caught by the hoop-iron catch at the bottom, or they will have to be watched pretty carefully, or they will tumble over.

I have thought, if we were making all new frames why not have the lower end of the front bar a mere point? but then the bees would, a few of them, get between the end of the frame and the front board unless there was a bee-space between the frame and front board.

I think we like the hive and frame we have always used better than any other, because we better know how to handle it. But there are advantages in this style of hive, I am quite certain, which we can not get in the hive with a hanging frame not having closed ends.

Roseville, Ill. MRS. L. C. AXTELL.

[I do not know that I clearly understand just what kind of a closed-end arrangement you use. If I mistake not it is the original Quinby without the iron hooks. You know that Capt. Hetherington and P. H. Elwood use the Quinby system, slightly modified. As they use it, I do not think they are troubled much with the killing of bees in the way you speak of.

I know that propolis will build up between the uprights or closed ends; but, if I am correct, this can be largely obviated by compression. This is so with the Heddon shallow closed-end frames. Although we have used one of his hives some three or four years, there is scarcely more propolis between the uprights than there was the first three months it was used. The compression keeps it out. I shall be glad to have this subject discussed, particularly by Mr. Elwood and Mr. Hoffman, and by others who have had experience "along this line" as Doolittle says.] E. R. R.

WAX SECRETION.

PROF. COOK STILL THINKS WAX IS SECRETED ONLY WHEN NEEDED.

Friend Root, it is pleasant to read the replies in the last number of the *American Bee Journal*, to the query regarding wax secretion. Nearly all think bees do not secrete except when it is necessary in the economy of the hive.

In the March 15th number of GLEANINGS you remember I went a little further. I urged that bees secrete only when the wax is needed, as a rule, and gave, as the best hypothesis explaining this that quiet was the probable explanation. I should add, quiet under full nutrition. That is, the bee is functionally active, eats much, but exercises very little.

In your foot-note you remark that you formerly thought as I do; but you add, that abundant wax scales, produced while feeding sugar

syrup—so abundant that they fall to the bottom of the hive—makes you skeptical. I have noticed the same thing that you speak of, and it the rather confirmed my view. If we feed syrup in quantities, the bees are nervously stimulated, and I think the functional activity is by no means slight; yet, how little they exercise! There is no occasion for much exercise. With a chance they will build comb very rapidly. Supply them a full set of combs, and they have no use for the scales, and the latter lie thick on the bottom-board. This strengthens me in the view that wax is secreted only under those conditions which usually prevail when wax is needed. That is, the bees are functionally active under high nervous tension, and yet are not exercising much, either from choice or because, as in case of feeding, there is little or no occasion for much exercise. The fact that they do not secrete wax except when it is needed, I feel certain is, as a rule, well grounded. If any one can give a better solution of this problem than is afforded in the theory of physical quiet in conjunction with a stimulated condition, I should like to hear it. A. J. COOK.

Agricultural College, Mich.

E. FRANCE GIVES US SOME SHARP FACTS THAT WE CAN NOT WELL GET AROUND.

In March 15th GLEANINGS, page 212, Prof. Cook gives us an excellent article on wax secretion, and A. I. Root makes some good remarks. Now, I don't intend to criticise either of you; in fact, I agree with both of you. But I have a theory of my own as to when and why bees secrete wax. They secrete wax whenever they have more honey than they have combs in which to store it away. At such times they have to hold their honey in their sacs—they have no other place to put it. The wax is secreted as a consequence of holding the honey in their sacs. Now, this is the whole sum and substance of wax secretion. Give a new swarm of bees a full set of empty combs, and will they secrete wax? No, not much; but give them an empty hive when honey is plentiful, but no combs, then the secretion goes on rapidly. Why? Because the bees' sacs are full of honey, and they have to hold it until combs are built to store it away.

Another case: Hive a swarm in an empty hive when there is a dearth of honey. When the bees have to eat all the honey they can get to keep alive, will they secrete wax? Not any. They have no honey in their sacs. I hived a swarm last September—a good-sized one—and they lived until cold weather, but never built an inch of comb—then starved. Why did they not secrete wax? No honey.

I have seen it stated in the bee-papers that only young bees secrete wax. Now, I think that is a mistake. I have no doubt that young bees do secrete wax; but that they never secrete wax after they are old enough to go to the fields and gather honey is not so. I know that bees will secrete wax and build combs until they are six weeks old. Can I prove it? Yes. Several years ago a bee-man near here hived a swarm of bees in a frame hive that I sold him. Just 21 days after, they had filled the hive full of combs, and a set of boxes with honey, and swarmed. That day the swarm was put into another hive, and they filled that hive also, in three weeks. Now, don't you see that this last swarm of bees were at least a part of the first swarm? or in other words, every bee in the last swarm was one of the first swarm, and was not less than 21 days old, and they could not get young bees in the second hive in less than 21 days more? So the same lot of bees were secreting wax and building comb for six weeks. I believe that, as long as a bee lives, it can secrete wax and build comb with it, and that old bees can secrete wax as freely as young ones, and that wax is never secreted to any amount unless the bees have to hold their honey for the lack of room to store it away, and they can not secrete wax unless they are holding honey in their sacs. E. FRANCE.

Platteville, Wis.

[Friend France, I congratulate you on the point you make in regard to bees secreting wax when they are six weeks old. I never thought of it before, but your argument is unanswerable. A swarm that casts another swarm inside of 21 days must surely send out only old bees. I have been satisfied for years that old bees can secrete wax, nurse brood, or do almost any thing else, on a pinch.] A. I. R.

DOOLITTLE TELLS US WHAT HE THINKS OF MILLIONAIRES, AS WELL AS WAX.

I read with interest Prof. Cook's article on page 212 of GLEANINGS for March 15, and heartily wish he were correct. He may be so during a time of moderate flow of honey, with no desire on the part of the bees to swarm; but with a good honey-flow, and a disposition on the part of the bees to swarm, I can only think him in error, in the light of past experience. Take his example of the "cow secreting milk when there is a young calf that must have milk;" and instead of proving what he wishes it to, it most surely proves that wax must be wasted when a swarm of bees is hived in a hive fully provided with comb, when we come to apply that example to the bees. The cow secretes milk according to "nature's arranging" before the birth of the calf, so that it may have a supply when it enters into the world; so the bees begin to prepare for their future home some length of time before they leave the parent colony by secreting wax, so that they may be prepared with the needed material when they enter their new hive, which, as a rule, is all "swept and garnished," only as man's hand changes their usual surroundings. If the professor has ever examined a swarm of bees as they hang on a limb, waiting for the scouts to return and report "a future home," and failed to find wax secreted in the wax-pockets, he has found a state of affairs that I never did. With this wax already secreted, what is to become of it when the swarm is hived in a hive already fully furnished, unless it is wasted? That it is not found on the bottom of the hive is no proof that there was no secretion, or that it has not been wasted; for I have repeatedly seen bees leaving the hive with wax scales in their mouth, and once or twice have seen them drop them soon after taking wing, although I believe that the greater part of this waste comes about by an unnecessary thickening of the combs, and a useless daubing of wax about the hive. I have seen the limbs of trees, on which swarms have clustered, plastered over with wax, the secretion was so great; and when swarms have been hived on full sheets of foundation, I have scraped the cells off the foundation, which most would call "foundation drawn out," only to find the foundation in as perfect condition as it was when it was placed in the hive, the bees simply adding their wax to the side walls of the foundation. I may be wrong, but I can see in this only a waste of wax, or a waste of the foundation; have it which way you please. In times of a slow yield of honey, and perhaps I might say at all times, I do not think as much wax would be secreted when the swarm was hived on empty combs as there would be in an empty hive, for the continuous secretion which goes on after the swarm is

hived in an empty hive till the hive is filled with comb would be avoided, and thus a part of the secretion would be stopped. It is for this reason that I have advised using only starters in the sections if the hive is filled with combs below, or using only starters in the frames below, if the sections are filled with combs or with foundation. In this way the wax which the bees have already secreted, and that which is in the process of secretion, is saved, hence no waste at any point.

THOSE MILLIONAIRES.

I was taken by surprise at what I found on pages 213 and 214 of the same number of GLEANINGS; and, friend Root, as you took a column and a half to reply to friend Heselton's half-column, and then called a halt, perhaps you will allow me to say a few words for both of you in the column still due Bro. H. With you, I agree that a man is not necessarily wicked because he is in possession of *much* money, nor is he in a wicked calling because he is a lawyer; but if his money comes to him through fraud or dishonest practices, in which his poor neighbors are robbed of the amount he gains, above what he earns, then he can only be classed with sinners, no matter how many charitable institutions he helps or founds; and if he is a lawyer, and lends his influence toward the framing of unjust laws, laws which oppress the widow and the fatherless, then the cries of these "laborers will enter into the ears of the Lord of Sabaoth," and happy will you and I be, friend Root, if we are found in opposition to such practices, and if we lift up our voices and our ballots against a state of things which allows of this oppression; for then we are not partakers in these crimes, even if they do not cease to exist. There are only three ways in which money can be secured: By earning, by charity, and by fraud (theft). When "old Hutch," secured his millions by the wheat corner a few years ago, did he earn a cent of it? No, he stole it; and by his becoming that much richer, those who earned the money which accumulated in his hands were just so much poorer. If he had given all this pile to good institutions, the Lord would not have blessed him for the gift, although he might have blessed the institution. So of railroad wrecking, trusts in oil, sugar, coal, etc., which rob the laborer of his hire, which things are allowed to exist in our land by the votes of the people, votes which they cast ignorantly, by allowing their minds to be drawn aside from the right and real issues of the day by scheming politicians. Then, by our present tariff laws the poor laborer of our country is compelled to give charities to the rich, just in proportion to what he is obliged to consume; and so we see thousands and millions of our people suffering for the actual necessities of life that a few thousands of our people may become rich. John D. Rockefeller is reported to be an eminent Christian gentleman, and yet thousands of the poor seamstresses of our land are spoiling their eyes, and have been for the past years, because they could not earn the wherewith to buy oil enough to have sufficient light to sew during the hours of the night which they were obliged to work to keep soul and body together. Now, Bro. Root, something is wrong somewhere, and it becomes you and me to see that we are on the right side, and that is why I write on this theme. I know a bee-paper is not the proper place for a discussion of politics or religious doctrines; but as you took a column extra on that subject, I thought you would allow the same space to me, if I were not abusive, and I have tried not to be. G. M. DOOLITTLE.

Borodino, N. Y., March 28.

[Friend Doolittle, Prof. Cook will have to answer you in regard to the wax problem; and if I really took a column and a half before, I certainly ought not to occupy any space just now. But we should all be careful to look on both sides of these great national questions, and we should also beware of uncharitable extremes. There is a safe ground, and a right one in all these questions, and we who are striving to follow Christ Jesus ought not to be very far from each other in our opinions.]

THE VALUE OF EMPTY COMBS; A VALUABLE EXPERIMENT, SHOWING THAT BEES SECRETE WAX WHEN COMPELLED TO BUILD COMB.

With Prof. Cook, I greatly doubt whether bees have to secrete wax unless there is a great honey-flow, and no place provided for them to deposit it. A few years ago this same subject was talked up in the bee-journals; and as I had helped some in an apiary for over 20 years, and had read so many different opinions and theories on the secretion of beeswax, I felt very much like making a few observations, and it was not long before an opportunity presented itself. It was a very warm morning in the swarming season. Mr. M. was called from home, and I was left alone to care for the bees. In a short time the swarming-note was sounded, and "the bees had swarmed." We were making use of some drawn-out combs at the time, and I got a hive, filled it with some of them, and hived the bees; then I wiped the sweat from my face, and returned to my labor. This was swarm No. 1.

I had hardly got settled down to work, when "buzz, buzz," and out came another swarm of bees. "Ha, ha!" I said to myself, "now is my time to experiment a little." So I went and got a hive, filled it with empty frames, and hived swarm No. 2, and then awaited results.

The next day I went to look at them. Swarm No. 1 I found very busy at work bringing honey from the field, and depositing it in the combs; and on the alighting-board and bottom of the hive there was quite a quantity of those little wax scales; but it was very difficult to find any scales in the wax-pockets on the bees. Then I went to No. 2 and found there were not more than half as many bees going and coming from the field as there were from No. 1. I very gently raised the cover and looked in, and found the rest of them hanging in festoons to the top-bars, quietly working at their trade of comb-building, while those that came from the field seemed to be bringing honey for them to consume, to produce the wax to build the comb from; and the secretion of wax was very plentiful on the bees, but there was none on the bottom-board nor around the entrance to the hive.

They worked on in this way for a few days, and built comb very fast; then the yield of honey in the field diminished, so they could get but a little; and although they were still inactive, the wax secretion diminished, and comb-building progressed very slowly. Therefore I think consumption causes production; and if circumstances are such that the bees consume a large amount of honey, they they will secrete a large amount of wax. But this is no saving; for, if the honey that they consume to fill the hive or boxes were stored in surplus boxes or comb, it would pay for combs or foundation to fill a number of hives. OBSERVER.

[My good friend, you have given us a most valuable experience. First, it indicates beyond question that a colony will store more honey for the extractor when they have a full set of combs. Sheets of foundation would probably come next to full combs; but empty frames are away behind. Our older readers may remember that I made experiments in just this line

nearly twenty years ago. A new swarm, with a full set of empty combs, does, however, secrete quite a little wax. They put it on top of the top-bars, extend out the length of the cells wherever the space will admit of it, and often put little fins around the end-bars. The point of great value to bee-keepers is this: A new swarm, hived on empty frames, will at once—at least the greater part of them—hang idly until the wax scales are secreted; whereas, with full sets of combs, nearly all these bees could go at once to the fields for stores.]

WEST'S CELL-PROTECTOR.

A NEW AND VALUABLE DEVICE.

The cell-protector was worth over $100 to me two years ago in swarming-time, as I requeened over 100 swarms with cells from my choicest stocks, and at the same time stopped swarming where the cells were introduced. My bees wintered well and came out strong the following spring, while others lost very heavily all around me.

I dare not say that it is a positive fact that the method I practiced two years ago will always prevent swarming, but it did with me in four different yards, and it was a swarming year too. The hives that I did not treat that way nearly all swarmed, and in many of them we killed the queen while the swarm was on the wing, and destroyed the cells in the hive and gave them a choice queen-cell in the protector, from a hive that had cast a swarm five or six days before. This is easily done while the bees are on the wing.

This way of requeening a yard of bees costs nothing, and gives you a chance of doing it when swarming-cells are plentiful, and this is the time to do it, because we can get better queens; and by going to a hive that has not swarmed, and especially if for any cause the queen is condemned, kill her and destroy the cells if any are started, and give them a choice cell in the protector at once.

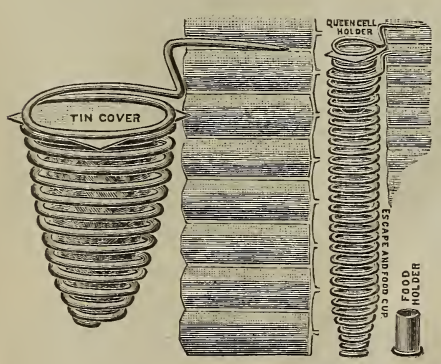


Fig. 1. *Fig. 2.*

N. D. WEST'S SPIRAL-SPRING CELL-PROTECTOR.

If you want to raise any virgin queens, go to a hive that has cast a swarm five or six days previously, cut out carefully all the cells you wish to save; place the min the protectors; lay them in a box of cotton, or have a block with a number of holes to set them in until you are ready to use them. Now, when all cells are cut out, just place the cell, as it is already in the protector, on the side of a comb in the same hive. By pushing the spur of the protector (see Fig. 1) into the comb it will stay there; and with the long queen-cage placed below (see Fig. 2), it, with its spur pushed into the comb, will also stay, and there is queen food in the bottom of this cage, so that, when the queen hatches, she will run down into this cage. In this way you can have a queen-nursery in any hive, and hatch out as many queens as you wish. Now, after the cells are hatched you can make as many nuclei as you have queens, by just taking one frame with adhering bees, and place in an empty hive; place another comb by the side of this; give them one of these virgin queens; close the hive, and so on until the cells are used up, and wait until they lay; then do with them what you please.

HOW TO USE THE CELL-PROTECTOR.

Hold the small end of the protector between the thumb and first and second fingers of the left hand. Hold the queen-cell by the big end in the right hand in the same way. Now you are ready to put the cell in: and as soon as the fingers of the right hand touch the cage, it will shorten up by pushing slightly, so as to fix the point of the cell just through the small end of the protector. Let loose with the right hand, and the coil will spring back and cover the butt end of the cell; then slip the tin cover in between the wire coil, just above the butt end of the cell; then you are ready to put the cell in a hive. Then just spread the combs apart far enough to put your hand in; now push the spur of the protector in the comb where you want it (see Fig. 1). I leave them just below the top-bar. Now place your frames, and you are done. The top of the protector is in plain sight when the hive is open. Care should be used to handle the cells right side up, without a jar. It is a satisfaction to look in a few days and find your cells all whole except where the queen has helped herself out. The bees can not destroy the cell before she hatches, if properly put in; neither will it be destroyed by spreading the frames if you wish to do so. N. D. WEST.

Middleburg, N. Y., Feb. 3.

[Mr. N. D. West is one of those bee-keepers at whose place I stopped in my bicycling tour. He owns some 400 colonies distributed in three yards. Although I made at his place a very brief call of only some fifteen or twenty minutes, I became convinced of the fact, by looking around with his son (the father was absent), that he is one of the bee-keepers who ought to let their light shine a little more. I met him for the first time at the Albany convention, and there he showed me a spiral-spring cell-protector. Several bee-keepers who have tried them said that they were a good thing. I have since been informed that Capt. Hetherington considers them so good that he has ordered 500, and that P. H. Elwood also wants a lot of them, and that both say they are ahead of any thing else they ever saw for a protector. Mr. W. L. Tennant said he would rather do without comb foundation than to do without these protectors. This estimate is perhaps a little strong.

I am well aware that this looks like free advertising; but when so many good bee-keepers assure me it is a good thing, I am glad to give it this notice, particularly as Mr. West charges a very reasonable price for them. As he pays for advertising space elsewhere, he can not be accused of taking advantage of this notice free. We are well aware that the principle of the protectors is old, and that Doolittle has used a *wire-cloth* cone for years, but I believe the idea of using a spiral spring is new. The point of superiority over wire-cloth cone-protectors is, that the spirals adjust themselves to the size of the cell, causing the tin slide shown in the en-

graving to press down on the top of the cell, so that the end, or point, of the cell is squeezed against the apex of the cone. With the wire-cloth protectors I have known bees to push the cell up, crawl inside of the cone, and gnaw into the side of the cell; but they could not very well do it with Mr. West's spirals.

The point he makes, that the requeening can be done during swarming-time, is a good one, as is also the point that an extra-long cone can be attached to shorter ones, the queen hatched out, and be retained a day or two until a place is found for her. The facility with which these cones can be attached to the combs is another point in their favor.] E. R. R.

EVAPORATING HONEY BY SOLAR HEAT IN FLORIDA.

W. S. HART'S DEVICE, AND HOW HE DOES IT ON A LARGE SCALE; HE THINKS SOLAR EVAPORATED HONEY IS NOT INFERIOR TO THAT RIPENED BY THE BEES.

By request of some of your southern correspondents, backed by your own, I give you a description of my method of curing extracted honey. But first let me say I had a short interview with the editor of *The Florida Farmer and Fruit Grower*. The editor, in commenting on my honey, said, "Not content with the desiccation done by the bees, he reduces it in a sun evaporator, in a large pan under glass, to a consistency so dense that it will keep a long time without candying." The honey shown to editor Powers was cured more than that which I usually send to market. I cured it while testing the evaporator to see what it would do, and to see whether thorough curing with solar heat would darken the color. His description of the honey was a correct one, and shows that there is no reason for uneasiness on that point.

My honey-house is set upon a concrete base, about two feet high, bringing the floor of the lower room below the surface of the ground, and the sills a few inches above ground. Here in this lower room I store extracted honey in barrels. From this room there is a large air-pipe running out at the top of the building, which keeps up a circulation of air.

Work for the apiary, such as extracting, is done on the next floor above, while the third floor is used for storing empty hives.

From my large geared Stanley extractor the honey runs into a tank capable of holding 1350 lbs., that rests on the floor in the northeast corner of the extracting-room. The honey passes from this to the evaporating-pan by way of a faucet and a tin pipe projecting through the side of the building. The evaporator is made of heavy tin, and is incased in wood, as are the tanks also. It is 8 feet long, 4 wide, and with sides 2½ inches high. Every four inches of its length there is a tin partition 2 inches high, running from one side to within 4 inches of the opposite side, and alternate ones soldered to the opposite sides, so that the honey flows back and forth across the pan, a distance of about a hundred feet, before reaching the faucet at the lower end, through which it falls into a tank below, of the same capacity as the first mentioned. Any one who has seen a syrup evaporator will fully understand the workings of this one.

The tank below runs on trucks and a track, and, when filled, it is rolled out to the large sliding-door that divides the evaporating-room from lower story of the main building. From the faucet in the tank, the honey runs directly into the barrels, which are placed on end on the floor of the storing-room.

I fill all my barrels at the end, for several good reasons. When full the barrels are bunged up tight, and are ready for market, except that I always drive up the hoops just before shipping, and put double-pointed tacks behind them to prevent the possibility of slipping.

The evaporating-room is built on to, and runs out 11 feet from, the north side of the honey-house, and flush with the east side. The east wall is 5 ft. 6 in. high above the floor; the back wall 6 ft. 9 in., and the room is 5 ft. 4 in. wide. Three sash, 3x6 ft., are used to cover the room, except next to the main building, where the shadow falls. The evaporator is arranged to go close up to the glass, and can be lowered or raised at the north end to increase or diminish the speed of the honey-flow according to the heat and amount of curing desired. The evaporating-pan can be taken down and carried into the storing-room when not in use.

In both the front and back wall of the evaporating-room there are two rows of 3½-inch holes, bored and covered with wire netting, to allow a free circulation of air over the honey. The past season I have also left the door of the room open most of the time, as I find that, the greater the circulation of air, the quicker the honey cures.

The evaporating-pan is put quite close up to the east side of the room, leaving a space on the west side for a person to work over the pan to scour it or clean honey out of it when a light grade is following a dark one. The tank below is laid on casings that raise them a foot above the floor. This makes it more convenient to handle the tank or to draw honey from it into pails for home sales. The utility of the evaporator consists in the fact that honey can be taken from the hives when not over a third capped, and it can then be cured more thoroughly than could be done in the hives by the bees, thereby very largely increasing the crop. Capping honey is a slow and expensive process. By this system an even grade of honey is obtained, with much less labor and expense than when left longer in the hives. Some able men claim that honey is better flavored when ripened by the bees. I can not agree with them in this, nor do the returns and reports from those who sell my honey indicate the correctness of this theory. Nor could any bee-keeper, who has ever tried, tell me with any certainty which sample of honey handed him was ripened in the hive, and which by sun's heat. Usually they select the latter for the former, as it is usually of a heavier body. With the arrangement here described I have no trouble in thoroughly curing my crop of fifteen to twenty-five thousand pounds, and I could handle still more without enlarging my outfit, though a larger evaporating-pan would be an improvement. I have to-day 113 colonies, perhaps, of bees. W. S. HART.

Hawks Park, Fla., March 16.

[Many thanks for the full details of your arrangements, friend H. Although we have described similar ones before, we have not heretofore had such a report from direct practical use. My experience has been, that, for drying lumber, evaporating fruit or vegetables, or any thing of this sort, a very large volume of dry air should be made to pass over or through the product. You did not tell us how long it took to evaporate a barrel of honey. Of course, it would depend upon how thick it is to start with. Very likely your locality would give you more and stronger sunshine than we get here, especially in March and April. This present spring, up to date of writing, April 4, has been cloudy and rainy, as a rule, while sunshine has been the exception.]

THE HONEY-BEE.

A REVIEW OF COWAN'S NEW SCIENTIFIC WORK, BY ERNEST R. ROOT.

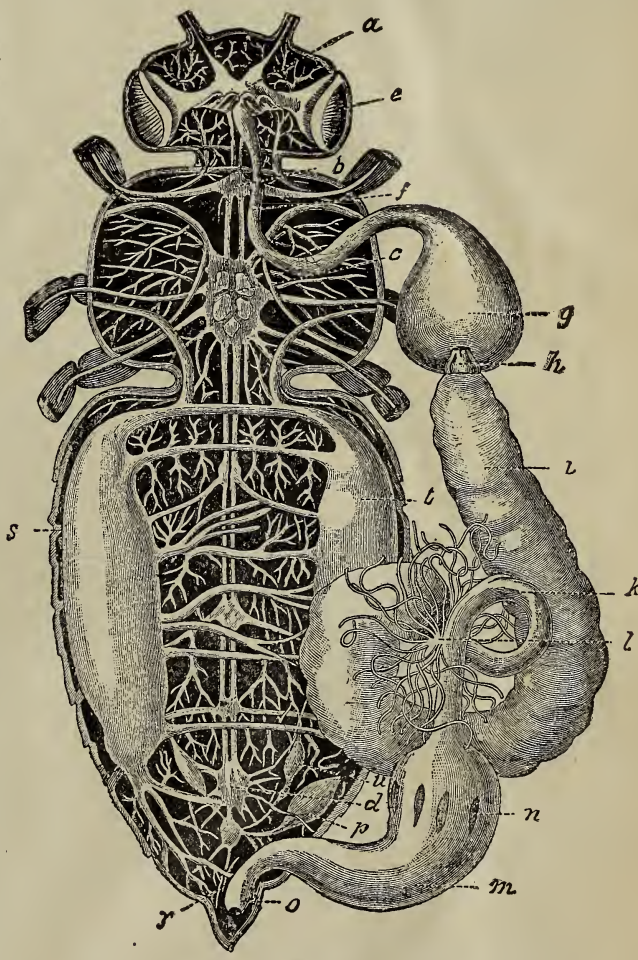
Agreeably to my promise made some time ago, I will now try to give you a taste of some of the good things that appear in that new scientific work entitled, "The Honey-Bee: Its Natural History, Anatomy, and Physiology, by Thomas William Cowan." The book is a small one, 6½ by 4½, and contains 192 pages; but it represents an *immense* amount of painstaking work. It is neatly bound, and appropriately embossed in gilt. It is wholly scientific, and therefore it has little or nothing to say regarding practical apiculture, that part being entirely delegated to a former work of the author's. During my spare half-hours in the evening I have been studying the work with a good deal of pleasure. It is not a book that can be read like a story, but it is one that requires attention and careful study. Unlike some of the larger works, it is condensed, but still seems to cover the most that is important from a scientific point of view regarding our little friends the bees.

One thing that struck my eye particularly, was the beautiful frontispiece engraving, showing almost the entire anatomy of the bee; and I became so much interested in studying it that I here reproduce it for the benefit of our readers.

Now, if you will have a little patience I will try to give you the gist of my reading, and at the same time avoid the use of scientific terms, so far as possible. I may remark, in passing, that the anatomy of the bee is, in many respects, similar to that of the human body; and in describing the various organs and functions I will endeavor to call attention to those that are similar in our own frames.

I will first call your attention to the alimentary canal—that is, the organs of digestion and assimilation. What is digestion? Our author says, "It is the separation of the nutrient part of food from the non-nutrient, and the conversion of the nutrient into a liquid fit to mingle with the blood, and thus nourish the body of the insect." We all know how the bee gathers up his food through his wonderful and delicate little tongue. It then passes into a little tube just below the point A, in the engraving, and is called the œsophagus, or gullet. We find a similar organ in our own bodies, leading from the mouth and communicating directly to the stomach. This œsophagus passes through the waist of the bee, or thorax, as it is called, and to the honey-stomach G in the abdomen. It is in this little sac, although it can hold but a tiny drop at a time, that millions and millions of pounds of nectar are carried annually and stored in our combs. This sac G is located in the fore part of the abdomen, or "hinder" part of the bee, as the boy said.

Several years ago I had a curiosity to know what the bees were working on. I suspected that they were gathering juices from over-ripened raspberries on the vines. In order to satisfy myself I grasped a bee by her waist and abdomen, and pulled until the parts were separated, and then was revealed the little honey-sac, which had disengaged itself from the abdomen. This contained a light purple or wine-colored liquid. The size of this honey-sac, as nearly as I can recollect now, was a good big eighth of an inch; and I should remark that the bee had all that she could contain in her little pocket.



SECTION OF BEE, SHOWING ITS INTERNAL ORGANS.

Cheshire says that, when the honey-sac is full, it is ⅛ of an inch in diameter. This would agree with my observations.

STOMACH-MOUTH.

The next thing that engages our attention is a sort of valve, which has been call the stomach-mouth, and is located between the honey-stomach and the true stomach; viz., at H. This is one of the most interesting of organs; and I suppose that no part of the internal anatomy of the bee has been studied more, theorized about, dissected, and examined, than this delicate and

beautiful little valve. At H its true structure does not appear. It has been likened in appearance to a bud just about to open. It is a sort of valve, fringed on the inside with rows of bristles, or hairs, the object of which seems to be to separate the pollen grains from the nectar, the former passing into the stomach L. Without special engravings which I may yet copy from Mr. Cowan's book, I can not explain exactly the manner in which this valve performs its functions.

TRUE STOMACH.

This corresponds to the stomach in our own bodies, and performs the same function in the way of digestion in converting the nutrient particles of the food into blood. The inside walls of the stomach have certain cells which perform certain offices; but without more definite engravings it will be impossible to describe them in detail.

The next organ is the small intestine, or, as it is sometimes called, the "ilion." In the human body the small intestines are much more elaborate. It is in this that the food, after its digestion, passes, and where, by absorption, the nutrient particles not already absorbed pass into the blood, and so on throughout the system.

You will notice, also, at L, some small radiating filaments. These are called the malphygian tubes. It is not certain what their office is, but it is thought that these are the urinary organs.

At the end of the small intestine, K, you will notice an enlargement, M. This is what is called the colon. Those who have been studying the water-cure remedy, as given in GLEANINGS lately, will know something what this is in the human body. Although the appearance of the colon in the bee is different from that in the human body, yet its functions are very much the same; and if allowed to become dammed up by excreta (that is, by retention during winter) it is liable to cause disease in the bee, just the same as in the human body. On page 112 Mr. Cowan says:

From the colon, what remains of the undigested food is expelled by the anal opening (frontispiece, o). For this purpose strong muscles exist, by which the colon is compressed and the excreta ejected.

The quantity of the excreta voided, usually of a dark brown color, is regulated by the nature of the food; bad honey, an improper substitute for honey (such as glucose) producing a larger amount, while good honey and good syrup produce less, a larger proportion of it being digested and absorbed. It is, therefore, important that bees should have good food, as, in a healthy condition, workers never void their fæces in the hive, but on the wing. In the winter it is retained until voided on their first flight.

So you see, then, that bad food makes mischief, just the same as it does in the human body, and it is in this that the overplus of fæces is stored during winter.

HOW THE BEE "MAKES" HONEY.

After the nectar is gathered, it is then transferred from the tongue to the œsophagus and thence to the honey-stomach, G. It has been shown repeatedly by experiment that there are a great many more pollen grains in the nectar than in honey; hence the little stomach-mouth H comes into play in separating the grains from the mouth. On arrival at the hive, the bee regurgitates—that is, expels the contents of the honey-sac into the cell; but during its stay in the honey-sac the nectar has undergone a change; that is, it has been converted, says Mr. Cowan, from the cane sugar of nectar into the grape sugar of honey, by the agency of a certain gland. This sustains the position held so persistently by Prof. Cook, and his view is doubtless correct; for when two such doctors agree, and cite the authority of almost all of the eminent scientists of Europe in its support, the rest of us will have to fall into line.

But the bee may not regurgitate the honey, for it may pass directly into the chyle-stomach. We see, therefore, that, when a swarm issues, the bees, after filling their honey-sacs to their full capacity (a very small drop), can carry with them a supply of food to last them for several days; and even while on the wing, through that little stomach-mouth, H, they may take nourishment. So much for the alimentary canal, its office in digestion, and the honey-stomach.

THE NERVOUS SYSTEM.

Let us now turn our attention to the nervous system. By referring to the engraving you will see parallel and medial lines passing the entire length of the bee, and finally communicating with the brain A. Along at irregular intervals will be seen thickened masses called "ganglia." These are really little brains, and, as in our own bodies, preside over the involuntary muscles. The largest ganglion is the brain, at A, and is the seat of voluntary action and intelligence. One is surprised in reading through chapters 10 and 11 of Mr. Cowan's work, how thoroughly scientists have studied the structure of the nervous system as found in the bee. Even the tiny brain has been dissected, and its various functions pointed out—that is, what parts communicate with the antennæ, what part with the eyes, etc. I was greatly interested, in looking over the sizes of the different brains found in different insects. I quote here a paragraph from page 70:

It is generally admitted, that the size of the brain is in proportion to the development of intelligence; and Dujardin, who made careful measurements, gives the following sizes: In the worker bee the brain is the $\frac{1}{14}$ of the body; in the ant, $\frac{1}{25}$; the ichneumon, $\frac{1}{100}$; the cockchafer, $\frac{1}{350}$; the dytiscus, or water-beetle, $\frac{1}{900}$.

In man the proportion is 1 to 40, I believe; but we all know that he is of the very highest order of intelligence. However, we are not very much surprised to learn that the bee has the largest brain of any of the insects, exceeding by far even that of the ant, whose intelligence we have admired over and over again.

THE RESPIRATORY SYSTEM.

It is also interesting to inquire how the bee breathes, and chapter 8 points out to us the wonders of the nervous system in the bee. By referring to the engraving given, we observe a couple of large air-sacs, called the "trachea," and correspond somewhat to the lungs. These are located on either side of the abdomen, as at T. These are divided and subdivided into smaller trachea, and these in turn ramify all through the entire body. Instead of fresh air being received in at the mouth, as with us, fresh supplies are admitted through 14 little mouths called "spiracles." Ten of these are located on the abdomen—five on each side—and are situated just about on the margin of the scales, between the dorsal and ventral segments. Four others are situated on the thorax, or waist, two on each side. You may, therefore, decapitate a bee and he will continue breathing as before. If you place a pencil dipped in ammonia near his body, the headless insect will struggle to get away; and if the pencil touches his feet, the ganglia already spoken of communicate the sensation to the other ganglia, and at once all the feet come to the rescue to push off the offending object, or, it may be, to take a closer hold so the sting may do its work. Besides that, if bees are daubed with honey they will die very soon from strangulation, because these little mouths or spiracles are closed. A bee may swim around in a trough

of water, and, though his head be entirely out, he will drown just the same, because these spiracles, or breathing-mouths, are submerged under water. On a hot day, if the entrance of a hive be closed, the bees will soon begin to sweat; and, thus becoming daubed, the delicate spiracles are closed, and the bees die.

ROYAL JELLY, AND WHAT IS IT?

Nothing in the book interested me more than the discussion in chapter 18 in regard to the royal jelly. Cheshire insists that it is a *secretion* from one of the glands; but Prof. Cook has maintained that it is the product of the chyle-stomach; and Mr. Cowan proves conclusively that this is the right view, and eminent authority is not wanting to sustain them.

This chyle is produced in what is called the chyle-stomach, shown at L. in the engraving; and worker larvæ are fed on this concentrated food for three days, after which they are weaned. "On the fourth day this food is changed and the larva is weaned; for the first pap has a large quantity of honey added, but no undigested pollen, as Prof. Leuckhart had stated. The drone larvæ are also weaned, but in a different way; for, in addition to honey, a large quantity of *pollen* is added after the fourth day." And right here I can not do better than quote from Mr. Cowan:

Microscopic examination showed that, in the queen and worker larvæ, there was no undigested pollen; whereas in the drone larvæ, after the fourth day, large numbers of pollen grains were found. In one milligram, no less than 15,000 pollen grains were counted, and these were from a number of different plants. . . . This work of Dr. Planta's, we think, conclusively proves that the food is not a secretion, and that the nurses have the power of altering its constituents as they may require for the different bees. . . . Royal jelly is, therefore chyle food, and this is also most likely the food given to the queen-bee. Schonfeld has also recently shown that drones are likewise dependent upon this food, given to them by workers, and that, if it is withheld, they die after three days, in the presence of abundance of honey. This, he thinks, accounts for the quiet way in which drones perish at the end of the season. It will now be easily understood, that, if weaning of the worker larvæ does not take place at the proper time, and that the first nourishing food is continued too long, it may be the cause of developing the ovaries, and so produce fertile workers, just as the more nourishing food continued during the whole of the larval existence in the case of a queen develops her ovaries, or even in the absence of a queen the feeding of workers on this rich food may tend to have the same effect. This, then, is the solution of royal jelly and brood food.

I would say, in conclusion, that I enjoyed greatly studying up this subject. It used to be an old passion of mine; but it took such an immense amount of time, and caused such a severe strain on my eyes that I abandoned it.

In my effort to put the whole of this into common parlance, I may possibly have stated some things incorrectly. If so, I shall be glad to have our author or Prof. Cook set me right.

THE CLOVER EXPERIMENT.

E. E. HASTY TELLS US HOW HE PROSPERS IN TRYING TO DRIVE DAME NATURE.

Friend Miller pokes me up with a "straw" about those clovers. Yes, doctor, I've got an improved clover (that is, part of the time I have it); but, just to pester me, it almost totally refuses to bear seeds. And the seedlings, when I do get a few, about nine-tenths of them backslide. The florets of this specimen of clover are double; and, as abnormal double flowers are usually seedless, my tribulations are not unaccountable happenings, but the regular course of the Cosmos. Never mind; just wait till we see what we shall see.

I have some fear that my phenomenon does not secrete nectar as freely as the unimproved clover. I do not see bees on it. But then, I believe bees rather seldom go to *one plant* of a thing that is new to them. I have never yet had even a square yard of it in bloom at one time. So far as length of tube is concerned, it seems to be short enough.

I have had over a dozen sub-varieties of clover in tow; but one by one I have dropped them, until I now have but four in training. You see, it's like trying to drive the hens away from their home. You can drive them a few rods away from the barn very easily; but the further you go, the more desperate they get in the determination to get by you and go back again. E. E. HASTY.

Richards, O., March 31.

STRAY STRAWS FROM PROF. COOK.

SHALL WE GATHER FIGS FROM THISTLES, OR WHEAT FROM CHESS? ETC.

That was a very happy thought—securing the "Stray Straws." Good, too, to use this valuable letter on first page, as it saves time; for your readers will soon pick for these grain-laden straws the first thing.

Does not Dr. Miller know that Michigan and Rhode Island are both experimenting with bees at their stations? They are both doing something with bees, and, I hope, for bee-keepers. Was this among your "Don't knows," doctor?

It is nearly as easy to quiet bees by the use of carbolic acid as by the use of smoke. If such practice antagonizes "foul brood," those interested may well adopt it. It is surely worth a trial by those who are sufferers.

Why does a writer in one of the recent journals say that it is proved conclusively that "foul brood" results from chilled brood? I did not suppose that there was a shadow of proof of that statement. When figs come from thistles, then we may expect foul brood from chilled, and I think not before. That "foul brood" should be more common north, is easy to explain. Disease always reaches for those of feeble health. That the microbe which attacks our bees should form no exception is easy to believe. The bee is native to a warm clime. North it is apt to suffer from a rigorous climate—to become enfeebled, and so form a ready seed-bed for this dread malady.

Dr. Miller places a minute interrogation-point, inferentially at least, after my statement that honey is a safer food for bees in quiet than is cane sugar. I know of no experience, doctor, that contradicts it. Do you? Suppose you feed cane sugar in the fall. When the bees are active they digest it and place it in the cells. They do this when active, unconfined, and able to digest it. The old saying, that "dyspepsia hates a buck-saw," applies here. Shut the bees up and feed cane syrup, and you have a different condition. I believe cane-sugar syrup, fed in the fall, is superb for a winter diet for bees; but fed in the winter, while they are precluded from all exercise, I should fear it. As Dr. Miller intimates, there is that which is called honey, which we would not care to eat, and better not compel our bees to eat, at least during the time of winter confinement. I am surprised at Dr. Miller's big (?) regarding a cure for the "nameless bee-disease." I supposed it quite settled, that removing the queen cured that ailment; but here I quote the doctor: "I do not know."

I am glad to hear Mr. Cowan's book praised. It is excellent. He gives the history of most of

our discoveries, and withholds no credit. He does not say that the upper head glands secrete the larval food, but, as I showed by actual experiment, a year ago, the larval food is really chyle, or a product of true digestion in the true stomach. I fed bees syrup with pulverized charcoal in it, and found the latter in the royal jelly. This could not occur if royal jelly were a secretion.

Our bees in the cellar seem to be doing very nicely. We must praise the past two winters for bees, even if we can not boast of the summers and their product. A. J. COOK.

Agricultural College, Mich.

[At the Detroit convention somebody asked whether chilled brood produced foul brood. I answered, "Not unless corn grows where corn has never been planted." R. L. Taylor added, "Or when wheat turns to chess." As good authority as R. L. Taylor gave us experiments that seemed to prove most positively that sugar syrup is a safer winter diet than honey, and I supposed this was well settled more than ten years ago. I have fed bees syrup all winter long, both outdoors and in the cellar, just on purpose to see whether it would hurt them. They came out strong and healthy. I have, however, had bees die from spring dwindling when it looked somewhat as if feeding during cold weather aggravated the malady. That experiment with pulverized charcoal in the syrup was a bright idea. I congratulate you on it, friend Cook.]

ILLINOIS PROPOSES TO HAVE A LAW TO PREVENT SPRAYING FRUIT-TREES WHEN IT MAY POISON THE BEES AND HONEY.

THE ADVANTAGE OF HAVING A LIVE BEE-MAN IN THE LEGISLATURE.

Friend Root:—Inclosed please find two bills which I have had the pleasure of introducing into our Legislature. Should they meet with a favorable consideration from you, any comments through GLEANINGS will be highly appreciated by myself and the many friends desirous of their passage. J. M. HAMBAUGH.

Springfield, Ill., Mar. 31.

37th Assem. HOUSE—No. 607. Mar. 1891.

1. Introduced by Mr. Hambaugh, March 26, 1891.
2. Read by title March 26, 1891, ordered printed, and referred to committee on horticulture.

A BILL

For an act to protect bees from poison through the spraying or otherwise treating of fruit or other trees, shrubs, vines, or plants, with London purple, Paris green, white arsenic, or other virulent poisons, while the aforesaid trees, shrubs, vines, or plants are in bloom.

Whereas, spraying of trees, shrubs, vines, or plants at the proper time greatly improves the conditions favorable for a crop of fruit, and

Whereas, spraying should never be permitted until the blossoms have fallen from the latest blooming trees, and

Whereas, the insects injurious to fruit do not make their appearance until about ten days after the bloom, and

Whereas, the spraying of trees, shrubs, vines, etc., while the same are in bloom poisons the bees and seriously injures the bee-keepers and reduces the signal benefits to the fruit-growers, who have repeatedly demonstrated that the bees ensure better crops, therefore

SECTION I. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That it shall be unlawful for any person to spray any fruit-trees, shrubs, vines, or plants, with Paris green, London purple, white arsenic, or other virulent poisons, or to scatter upon such trees, shrubs, vines, or plants, powdered London purple, Paris green, white arsenic, or other virulent poisons, while such trees, shrubs, vines, or plants are in blossom, and so may be visited by honey-bees in quest of nectar or pollen.

And that any person who shall spray such trees, shrubs, vines, or plants with London purple, Paris green, white arsenic, or other virulent poisons, or shall scatter the poison upon the same while in blossom, shall be deemed guilty of a misdemeanor, and for the first offense shall be punished by fine in any sum not less than five dollars, and for the second offense by fine in any sum not less than twenty-five dollars; and, in default of payment of the same, by imprisonment in the county jail not more than ninety days.

SEC. II. The fines resulting from the operations of this statute shall be paid to the State Treasurer by the court imposing the same, and be placed by said treasurer to the credit of the Illinois Bee-keepers' Association to be used by said association in promoting and developing the industry of bee-keeping in this State.

SEC. III. The Illinois Bee-keepers' Association may in its discretion employ a competent person as an executive officer for service in enforcing the provisions of this statute, whose powers, duties, and title shall be prescribed by said bee-keepers' association, and whose compensation shall be fixed by said association subject to the approval of the Governor. Said executive officer shall be removable at the pleasure of said association.

SEC. IV. The fines resulting from the operation of this statute, or so much thereof as may be necessary for the purposes named above, are hereby appropriated to defray the cost and expense of the work contemplated by this act, to be paid by the State Treasurer from funds not otherwise appropriated, upon warrants drawn only upon itemized vouchers, and bills signed by the president of the Illinois Bee-keepers' Association, countersigned by the secretary thereof, and approved by the Governor. *And provided, further*, that in no event shall the State of Illinois be held or become liable in any amount in excess of the revenue obtained through the operations of this statute.

37th Assem. HOUSE—No. 599. Mar. 1891.

1. Introduced by Mr. Hambaugh, March 25, 1891.
2. Read by title March 25, 1891, ordered printed, and referred to committee on appropriations.

A BILL

For an act to provide for the participation of the State of Illinois in the World's Columbian Exposition, authorized by an act of Congress of the United States, to be held in the city of Chicago during the year 1893, in commemoration of the discovery of America in the year 1492; and for an appropriation to pay the cost and expense of the same.

Whereas, the large revenues derived annually from the sale of honey by the bee-keepers of Illinois make this important industry worthy of the fostering care of the General Assembly, and

Whereas, a creditable apiarian exhibit by the bee-keepers of Illinois at the World's Columbian Exposition to be held in Chicago in 1893 will call marked attention to this growing industry and greatly assist in the development of the same, and thereby add largely to the material prosperity of the State, and

Whereas, the Illinois Bee-keepers' Association, an organization composed of the leading apiarists of the State, and duly incorporated in compliance with the statutes of this State, have petitioned this General Assembly for an appropriation to defray the expenses of making an exhibit of bees, honey, apiary supplies, and appliances at the World's Columbian Exposition in 1893, therefore

SECTION I. *Be it enacted by the people of Illinois, represented in the General Assembly*, That there be and is hereby appropriated to the Illinois Bee-keepers' Association, out of any money in the treasury not otherwise appropriated, the following sums, to-wit: For the payment of the expenses of making an exhibit of bees, honey, apiary supplies, and appliances at the World's Columbian Exposition to be held in Chicago in 1893, the sum of five thousand dollars, or so much of said sum as may be required to make a creditable display.

SEC. II. The Illinois Bee-keepers' Association may in its discretion employ a competent person as an executive officer for service in preparatory work and care of the State Apiarian Exhibit, whose pow-

ers, duties, and title shall be prescribed by said Bee-keepers' Association, and whose compensation shall be fixed by said association, subject to the approval of the Governor. Said executive officer shall be removed at the pleasure of said association. Any member of said Bee-keepers' Association, other than said executive officer, rendering service in connection with said State exhibit, by instruction of said association may receive as compensation therefor only necessary expenses and cost of transportation while actually employed in such service.

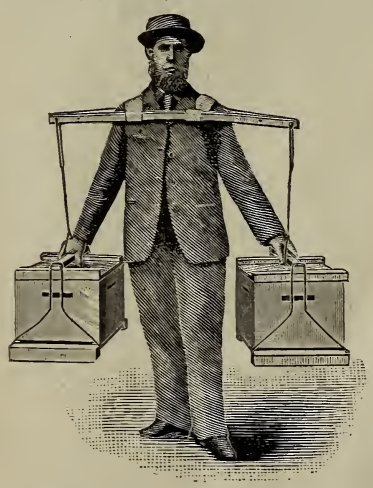
SEC. III. The sum of five thousand dollars, or so much of it as may be necessary for the purpose, is hereby appropriated to defray the cost and expenses of the work contemplated by this act, to be paid by the State Treasurer from funds not otherwise appropriated, upon warrants drawn by the Auditor of the State, which warrants shall be drawn only upon itemized vouchers and receipted bills signed by the president of the Illinois Bee-keepers' Association, countersigned by the secretary thereof, and approved by the Governor: *And provided further*, that in no event shall the State of Illinois be held or become liable in any amount in excess of the sum hereby appropriated.

[We publish the above for precedent for action on the part of other States of the Union. If your neighbor should undertake to spray his trees while in bloom, I think if you would show him the above he would be very likely to assent to the justice of your request, and forbear.]

M'FARLAND'S DEVICE FOR CARRYING HIVES.

HOW TO CARRY HIVES IN AND OUT OF THE CELLAR: A SEASONABLE ARTICLE.

Having not always found it an easy matter to procure good efficient help to assist in carrying bees to and from the cellar, I began some time ago trying to invent some way by which I could do the work more speedily and easily. Sometimes I would endeavor to do this work alone, carrying one hive at a time; but I found a hive of bees rather awkward to get hold of to carry any distance, and very tiresome when one has



M'FARLAND'S DEVICE FOR CARRYING HIVES.

100 or more colonies to place in winter quarters, as I have had. At other times I would place two or three colonies on a board, and take them to the cellar or to the yard, with the aid of an assistant. I found these methods quite unsatisfactory, as well as the plan of taking two men to carry in one hive at a time, which was not expeditious enough, and too expensive. I remember, when I used to work in the maple-sugar bush, we had sap-yokes to support and balance the pails on either side, and it occurred to me that this yoke might be adjusted for moving hives. After some little thought upon the subject I studied out the arrangement as you see herewith illustrated.

The yoke consists of two bent pieces of wood, fastened together in such a manner that, when adjusted, one piece is in front and one behind the carrier, and the weight comes squarely upon the shoulders by means of two wide pieces of webbing, making a very easy support.

The clamp attachment to the hive is of my own construction. I have loose bottom-boards, similar to the Dovetailed hive, and this clamp springs on to the bottom-board at the front and rear ends of the hive. It is very quickly put in place and taken off. I have used this yoke and clamp for some time past, and find it the most convenient contrivance for moving hives I have ever seen. By its use one man can do the work of two, do it easier, and with much less jar to the bees. F. H. McFARLAND.

St. Albans, Vt., March 4.

[Your device, although very old in principle and application, is good. Whether any one else has suggested a similar thing for carrying pairs of hives, I do not know. It puts the weight at the right spot, directly across the shoulders; and a man can carry more comfortably a weight suspended from the shoulders than from any other point. The arms come just right to steady the burden and equalize the possible difference in the weight of two hives. The only objection that I see to it is, that it would be a little unhandy about getting through narrow doorways, and possibly down steep cellarways. A great many cellar-steps are so constructed that the head comes about a foot above the top of the doorway when standing on the last step. It is so at my house; and I imagine that, with a couple of hives on the yoke, it might be a little inconvenient to stoop down and pass in. Still, I propose to try it. For upground repositories I think your device will work very nicely; and no doubt it can be used advantageously for *most* cellars having more convenient means of ingress and egress. This will appear when most of our friends will be thinking of carrying their bees out of the cellar, and it will give them time to make an implement and try it.] E. R. R.

WATER CURE FOR NASAL CATARRH, ETC.

WASH YE, MAKE YOU CLEAN.

Friend Root:—I read your article on water cure, in March 1st GLEANINGS, with a great deal of interest. I think you are right in exposing this great swindle, and also in giving to the people a simple remedy of such great value. The great judgment only can tell the amount of good you are doing in this way.

There is another subject I should be glad to see you take up in GLEANINGS, and that is nasal catarrh. It can be treated and cured in the same way you describe. Dr. Pierce, of Buffalo, N. Y., gets up his nasal douche, a tin holding perhaps a pint, with a tin tube near the bottom (on the order of the honey-gate in an extractor). Take a small rubber tube, some two feet long; slip one end on the tin tube and the other end on a little nozzle to go into one nostril. Dr. Pierce, of course, sells medicine for catarrh which is good, but not necessary in every case. Simple warm water, with a little salt in it, is good, and this, with a suds made from castile soap, has cured some bad cases. Put the liquid in the can; set it overhead; hold the rubber tube so

the liquid can not flow; insert the nozzle in one nostril, breathing through the nose, and let the liquid flow. It will flow up one nostril and down the other, cleansing and healing the nasal passages as nothing else can. Use the warm salt water and the suds (warm of course) each once a day, and it will cure any ordinary case. J. H. HILL.

Venice, Fla., March 21.

[Well done, friend Hill. While I was looking over Dr. Kellogg's book in regard to the Hall discovery, I noticed the apparatus you mention illustrated there. A few days ago I had quite a severe cold, and toward its winding up it seemed to me that it would just be fun to get Dr. Kellogg's apparatus and give my nostrils a good rinsing out. I did not know just how to go at it, however, and I was afraid I might get strangled, and therefore I let it go. Now you have made it as plain as A B C. But are you positively sure, my good friend, that there is any thing at all needed but pure water? Just listen. A poor woman was grievously afflicted with some kind of rheumatism. She and her husband scraped up money, and she went to a celebrated water-cure. Sure enough, she began to improve right away, and in a few weeks she was comparatively well. After she went back home, however, the old symptoms returned, and finally she was about as bad as before. It cost an awful lot of money to get to the celebrated springs, and they could not afford it. As a drowning man catches at a straw, however, one of the twain, I do not remember which, suggested that she take a daily bath with the water that was at hand, using it in the same manner she used the water at the medical spring. What do you think the result was? Why, a daily bath, with simply common water, relieved her of her trouble just as well in her own home as it did at the expensive watering-place. By the way, how much does it cost to go to a high-toned medical spring, and take a course of treatment, paying the doctor, traveling expenses, high-priced board, and all that? May be some of you can tell. And is it not humiliating to be obliged to confess that the whole thing amounts to nothing more nor less, *finally*, than the old-fashioned water-cure treatment of Fowler & Wells, published so freely all over our land more than forty years ago?

On page 273 of our last issue, a friend, who has been an invalid for years, tells us about using flaxseed in connection with flushing with water, for cleansing the small intestines as well as the colon. By the way, friends, I have been expecting all along that somebody would take exceptions to the way in which we were discussing not only subjects that are usually considered delicate, but matters that might be considered by some out of place, or lacking in dignity. Well, there has not been a single such protest that I know of, unless it was a little bit of pleasantry now and then. I suppose the reason is, that so many of us have been longing for relief in this very line, and perhaps longing for any thing that would give us aid in this matter of keeping the human frame divine sweet and clean, fit places for the dwelling of the Holy Spirit. Well, I have been eating flaxseed, as recommended, and I am rejoiced to tell you that, in my case, it answers the purpose perfectly. Please bear with me if I tell you just why I feel so certain that it is a valuable adjunct. I drank a great lot of hot water about seven o'clock in the evening—so much, in fact, that it made me feel uncomfortable to some extent through the night. Then in the morning I commenced, the first thing, eating flaxseed. It is not the pleasantest stuff to eat, by the way and I kept thinking, while I chewed it up fine, that I should prefer to have it cooked in some way, if it would answer the same purpose. I used the flushing remedy the night before, so that I could be sure that it was the flaxseed that did the cleansing if there was any. Well, within an hour after taking it I began to feel its effect. And now comes the whole point of my story. The offensive smell that I told you of when I first began the flushing, has not been noticeable for perhaps months. On this particular occasion, however, the old familiar and exceedingly offensive smell was present, indicating unmistakably that the flaxseed had loosened up and brought away accumulations that had been perhaps for a long while lodging in the small intestines, and matter that the water itself had not reached. We are surely making progress; and is there any other subject, in the whole range of human intelligence, of more moment and more importance than this one of making ourselves clean—of following the injunction found in the Scripture texts which I have so often quoted to you—"Wash ye, make you clean"? A great wave is going through our land, and possibly other lands, in this direction of thorough washing; and I tell you, it is a hopeful sign. When we bend our energies, and the intelligence of the thinking people of the world toward this matter of cleanliness, and of making our bodies not only clean without but clean within, wherever pure water can be made to go with the aid of all modern appliances, I tell you we are on the highway to some great achievement. One happy thing about it is, that it is within the reach of all—the poorest as well as the richest, and there should be no excuse hereafter for uncleanness in any shape or form. Our country has been given to booms—first one thing and then another. Sometimes these booms are wholesome and sometimes not. But if there is going to be a great big boom all over the world in washing the body more thoroughly than has ever been done before *since the world began*, it is certainly going to prove to be a good thing, and a great many steps heavenward; for "cleanliness is next to godliness." Let us wash our bodies, our feet, our hands, our heads, our ears. Small boys can have a share in this latter. How my good mother did used to exhort and reprove me because my ears and finger-nails were not clean! After we have got the ears and scalp washed and cleansed, then our *noses* must be overhauled, as our friend Hill advises. Then let us provide plenty of tooth-brushes, and wash our mouths and our teeth. Very likely some nice soap with the soft water, or perhaps some clean sand or charcoal dust, might help along. We want flesh-brushes and nail-brushes as well as tooth-brushes. And, by the way, who knows whether we shall not succeed in doing away with this disagreeable thing of a bad-smelling *breath* that afflicts some people? My dear friend, how many do you know among your acquaintances whose breath is offensive? May be you have been told that *your own* breath is offensive. If so, what would you give to have it sweet, pure, and clean, like the breath of a baby? Well, I am inclined to think that, with the information that has been given in these pages of GLEANINGS, the whole thing may be accomplished. Let us first put the whole body in the right shape with energy. You see, your friends do not always tell you when your breath is offensive; but your wife will; and next time you give her a kiss (I really hope it will not be three or four weeks before you do), just ask her to tell you whether or not your breath is improving. Oh! by the way, if you are in the habit of using tobacco, after you get cleaned up nicely, inside and out, you will be in excellent

trim to leave off the foul weed. Why, it would be a great pity to defile the holy temple after having been made clean in the way we have indicated. And all this great work in cleanliness, and its resulting health, is to be accomplished in your own home, by means of pure water, pure air, plenty of sunshine, and all the rest of God's free gifts. What will the doctors do? Why, bless you, we will pay them a good salary, and appoint them as inspectors to overhaul us, say twice a week, and see that we are doing our duty on the above line.

GIVING AWAY THE WATER-CURE SECRET AMONG THE FARMERS.

There is an agent in our neighborhood selling Dr. Hall's recipes. He hasn't sold any in this neighborhood, for I haven't been very still. The farmers are organized all over this part of the country, and it is an easy matter to get news around in a very short time.

Solitude, Ind., March 17. J. P. UTLEY.

WHAT A DOCTOR SAYS OF THE WATER CURE, AND ITS OLDNESS.

We have one of Dr. Hall's agents here selling the "secret" for $4.00. I am a graduate of the Hygeio-Therapeutic College, of New York, of the class of 1865, and have used the drugless remedy for 30 years. When I first heard of Dr. Hall's "secret" I said I could guess what it was; and I told the agent that, if there was one part of the water-cure system of more importance than another, it was the use of water injected into the colon. I am not practicing now, but I could give numerous instances of the relief administered by the syringe. I know of no better motto for health than "Trust in God, and keep your bowels clean." EZRA YODER.

Paola, Kan., March 11.

WATER CURE—USING IT TO EXCESS.

I think you extremely modest in putting the internal water treatment before the public. While others, through greed and avarice, are making money selling this as a new and secret remedy, I am glad that you are so magnanimous as to print and furnish it for distribution free of cost. Only lately I paid four dollars just to find that one Hall had learned this treatment about the same time I did. Now a word of caution. Old men sometimes ride hobbies, and it is said that old cranks are the worst of cranks. Don't come to regard this as a universal panacea. Don't recommend it on all occasions and for all persons. It is possible to practice it to such an extent that nature will cease to perform her functions, and the person be left dependent on artificial means for the operations that nature is intended to produce. I suppose you remember a case reported of a typhoid patient dying by using this remedy. Please send me 50 to 100 copies of the treatment.

Philipsburg, Pa., March 10. JNO. D. GILL.

WATER-CURE TREATMENT; WASHING OUT THE STOMACH.

I wish to say a word about that "drugless remedy." There is one point you have not touched upon. An acquaintance of mine was sick for a long time with a stomach trouble. The usual prescriptions were administered with but little effect. Finally the doctor brought a long rubber tube, about three or four feet long, with a funnel at one end. The small end was introduced into the stomach, and warm water poured into it until the stomach and tube were full. In a short time the funnel end was dropped low down over a proper receptacle, and the contents of the stomach all came out through the tube. All that was not digested was removed; and when food was taken again, the man had a clean stomach to start on, and his improvement was immediate and marked; and thus what drugs failed to effect the water accomplished. This doctor gives the same treatment to others afflicted in like manner. I suppose this means is known to you, but I think it should be mentioned in connection with your other "wash and be clean" arrangement. I know that the use of water will relieve the painful effects of piles, and am not sure but a frequent application will result in a permanent cure. RAMBLER.

LADIES' CONVERSAZIONE.

MRS. HARRISON GIVES SOME ENCOURAGING WORDS.

THE LADIES' PARLOR.

I had begun to think that GLEANINGS was not as good as it used to be. When a new one came I would look it all through to see if any of the ladies had written, and felt lonesome and disappointed when I found nothing from them. I do not believe that I take much interest in a bee-paper where the other sex do *all* the writing. The April 1 No. of GLEANINGS was a delight, a regular "conversazione." How nice in the editor to fit us up a parlor to do our talking in!

I am personally acquainted with all in attendance at the last "conversazione," with the exception of Mrs. Grubb, and to her I extend my ☞ in token of friendship, and I should be glad to welcome her to our bee-conventions or at my own home.

It is refreshing to hear from "Our Clearing" again, and hope that Nellie Linswik will come often and bring with her her sister, who wields so graceful a pen. I've long thought that I could not go to that great city of Chicago if it were not for my dear friend Mrs. Stow to guide me and keep me from being run over by the grip cars which glide upon one unawares. And now that I am the eldest, I will take the big chair, and Mrs. Axtell can recline on the sofa, as she is an invalid, and we will have a talk about seats.

RESTING-PLACES IN THE APIARY.

The girls will no doubt say, "Umph! *I* don't want any." My advice is, that you had better try them, at least. I've learned to do a great deal of work sitting that I could not do at all if I did not. A woman complained to a very self-reliant neighbor that she was not able to stand up to mix her bread. She replied, "Sit down, then." That was not the kind of answer she expected or desired, and she would not be apt to apply to her again for sympathy. Our hives stand upon the ground, raised at the back the height of two bricks, and one in front; and if I had to remove the combs from one hive to another standing, I could not do it; but I can enjoy doing it sitting. Our hives are eight-frame Langstroth, with cap and loose cover. The cover is two boards, grooved together and cleated. I've received a great many curtain lectures from turning these caps upon their sides and sitting upon them. I'm told that I rack them, which I do when the ground is uneven; and once I found myself sitting down suddenly upon four little boards. "If you *will* sit upon the caps, why don't you put the cover on and sit that way?" The cap is lighter, and of a height to suit me better. If I should get down upon my knees at the side of a hive, the rheumatism would find it out in an hour, and move in. If I

get upon my knees around a hive, I put down a cover and kneel upon it. It would be inconvenient to carry a chair around, and the height would not suit me as well as the cap does. I do not believe I could sit upon a cover, as Ernest Root does. Perhaps our young ladies can. I use hives for seats in different places around the apiary, under the green ash, when I'm watching for swarms, and sit down to eat a bowl of pounded ice, or in my office scraping out hives, which is under the leafy cover of a grape-arbor.

I have, in my rag-bag, a ripped-up pair of brown linen drilling pants. I intend to make a pair of mits of these, extending to the finger-tips. I know I can handle frames much quicker with these on, and the bees do not sting through linen. Their stings appear to slide over it and not penetrate it.

A GOOD DINNER.

That good dinner that Mrs. Axtell speaks of is a desideratum during the busy season of the apiary. But how to get it when there is no reliable help in the house is the question. I find that I can not leave food cooking over a gasoline stove, as well as over a coal fire. It is so much hotter, it boils dry sooner. If it is a cool morning I make a fire in the cook-stove, bake graham gems, and, if I want to cook snap beans, I put them on over the remaining fire, and they will cook slowly for hours; and if it goes out I light the gasoline to finish. Vegetables that cook quickly, like green corn, asparagus, etc., I get ready in the early morning, and cook over the gasoline. MRS. L. HARRISON.

Peoria, Ill., April 5.

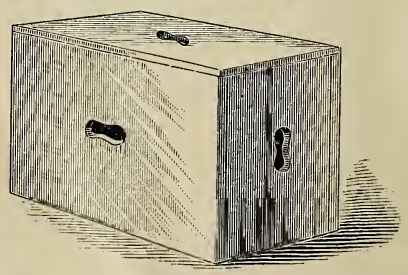
[Ever since this matter of seats has been mentioned in different letters, I have been feeling a little uneasy because I have not told you my own experience. I have several times been on the point of being used up through nervous prostration; and perhaps some of my friends think me notional even now, because I refuse to consider an important matter without first sitting down. The book-keeper will come to me with a list of bills to be paid, wanting my approval. Now, a great many times when I am putting on my nose-glasses I reach instinctively for a seat. As it does not look well for a man to set down and leave a woman standing, I often tell her to sit down too. But she says she does not care for a seat. Well, a good many times I don't; but when I am really suffering from lack of exercise, and when I could walk a mile through the woods and over the fields, I often feel that I should be used up if I did not have some place to sit down before I undertake any mental effort. I know other people don't care as much for a seat as I do, because they do not say any thing about it. But any comfortable place to sit down is to me, when full of care, like a drink of cool spring water to a thirsty man, or like an oasis in the desert to the fatigued traveler. When I get my book written, "How to Doctor People Without Medicine," I assure you that plenty of handy *seats* will be a conspicuous figure in the work. It is not only out in the apiary, but wherever people are employed where they are obliged to *stand still* a good deal, that seats are a saving of strength, and I feel sure, many times, a saving of life. One of the housekeeping journals advised the housekeeper to have handy, light strong stools of different heights. I often go through the rooms where our girls and women are at work; and I not only suggest but *insist* on their having stools to sit down on, when their work admits of it. If I am to show them any thing that occupies more than a minute or two, I want a stool to sit down on; and I want my pupils to sit down likewise. Now, stools sometimes play an important part in matters of more import than business and success in life. Sometimes I feel as if I should like to have a good talk with some of these good friends on their spiritual interests; and oftentimes I know beforehand that they will perhaps evade, and, may be, try to shift responsibility. At such a time I want to *sit down* by them, and I want them to sit down by me, in order that we may *fully* understand each other. Sometimes just the opportunity and circumstances seem to be at hand, and the only thing lacking is a couple of chairs or stools. If I could sit down comfortably, and see my friend also seated in like manner, it seems to me I could speak a word for Christ Jesus in a way that would surely bear fruit and bring happiness to the brother or sister in question. Now, then, who shall say again that a place to sit down is of little consequence?]

A HANDY SEAT FOR THE APIARY.

A PATENTED (?) ADJUSTABLE SEAT.

You ask, Mr. Root, for a description of the seat we use in our apiaries. We have tried a number of different kinds, but the one we have settled upon as the most convenient is simply a box 17x12x9 inches. For the end, take two pieces of ⅞-inch lumber, each piece 11x8 inches. For the rest, use ½-inch lumber, 17 inches long. A box closed on all sides is not very easily picked up. To make it so, put a hole in the middle of one side, 3x1½ inches. For greatest convenience, put one in each side. This makes a strong, light seat, and one that is very easily picked up. It gives us three different heights, which is of considerable importance. Turn the picture on one side, and you will see the seat at a different height.

I don't know why it is, but Dr. Miller and I never want the same height in a seat. He generally sets the box on end, using the 17-inch height, although he sometimes uses it at 12 inches. I prefer a low seat, and, if working at the hive when there is no tiering up, I like the 9-inch height. I can use the 12-inch quite comfortably; but the 17-inch would be very uncomfortable, unless working at an upper story, when it is quite convenient. So you see the advantage of having different heights.



HANDY BEE-KEEPER'S SEAT FOR DIFFERENT HEIGHTS.

Pine is good material for this seat; but something a little tougher might be better. It is very handy indeed to have a number of them in each apiary. It is nice to be able to offer company a comfortable seat, aside from the convenience it is to yourself to have an extra one or more lying around handy. They are quickly and easily made, and almost any bee-keeper will have plenty of waste boxes or other lumber that can be utilized in making them. So the item of expense need not be counted. It's a

good time to get them ready now, so as to have them all ready when the busy time comes. The way we came to use them in the first place was by having so many empty glass boxes lying around, which we used for seats; but they were not quite substantial enough with one open side. Dr. Miller always sat on the end; and after being in use for a while they would split, sooner or later, although the ends were of ⅞-inch stuff. Nailing up the open side makes them very strong.

HOW TO LOSE TOOLS.

Do you ever have any trouble losing your tools in the apiary? You are a model bee-keeper if you don't; for brushes, chisels, etc., have a habit of hiding just at the moment you want them most. Dr. Miller is very orderly about his tools (I'm not going to tell you how I am with mine). He usually lays them on top of a hive in plain sight; never on the ground. If he accidentally drops one on the ground, he stops immediately and picks it up, no matter what he is doing. He says if he doesn't he will forget all about dropping it and it is hopelessly lost. But even then, he sometimes loses them. It is funny how you can look for something in vain when it is right before you. If you have any difficulty with yours, an excellent way is to tie your brush, chisel, etc., to your apron, or button-hole, with a good strong cord. Then you are sure of them, and can drop them at will. Dr. Miller had an arrangement which he liked very well. He had a strong cord fastened together so that he could slip it on over one shoulder and under the opposite arm, and the string of each tool was fastened to this cord instead of the button-hole. EMMA WILSON.

Marengo, Ill., April, 1891.

[Your box looks as if it might be real handy, though I would about as soon use a hive-cover. Yet if I were to use that light handy box, with its *patent* adjustable heights, I might like it.

Yes, we do lose things, just the way you speak of; but more often one of our men in the other departments will borrow it without saying any thing about it, because it belongs to the big boss, and that is the last of it. This is one of our serious troubles at the Home of the Honey-bees.] E. R.

MRS. AXTELL DISCUSSES SOME IMPORTANT MATTERS.

CLOTHING THE FEET IN WET WEATHER.

Women's light rubber boots are not enough protection to the bottom of the foot, I think. I like boy's rubber boots better, as one should wear them only when the feet need protecting from dampness. They are a great convenience, even for persons who do not work among bees, to slip on and care for chickens in sloppy weather; and many times they will be found useful and healthful.

WHY QUEENS ARE SOMETIMES DESTROYED AFTER HAVING THEIR WINGS CLIPPED.

Some say they lose so many queens if they clip their wings. One reason, I think, is because the scissors were not strictly clean, and had been used for other purposes, and so left a scent on the queen, as bees have a very keen smell; or the fingers were not perfectly clean, or the wing was cut too close, or she was clipped during a honey-dearth when bees are cross. I believe that bees, oftener than we think, kill or ball their queen when handled in a honey-dearth (even when the queen is not touched), early in the spring especially.

NEVER TASTED HONEY.

We took a little girl of ten years of age from the New York Juvenile Asylum, to raise. She had never seen nor tasted honey before coming here.

WHY BEES DON'T PAY.

One reason some do not make bees pay, they have so much work on hand just when bees are needing care that the golden opportunity passes by, and the bees are not made strong enough in time for the honey-harvest. Mr. Muth's article in the *American Bee Journal* on that subject hits the nail on the head, and should be read by every one keeping bees. I believe that to be one of the greatest reasons, if not *the* greatest reason, we do not secure more honey each season. If the bees are strong in numbers, and have plenty of honey in the hive, and the hive is contracted so that the brood can be kept warm, such colonies need no feeding nor nursing: and in this locality they should be set out of the cellar by April 1. But if the colony is weak, or short of stores, unless the bees have extra care, their chances for gathering honey in paying quantities, even in good years, are slim. Some practice drawing brood and honey from strong stocks to build up the weak, but I think that does not pay, neither would I unite two weak ones unless one were queenless. I should prefer to unite three or four, or else build up the weak ones; as two weak colonies, both having a queen, do not seem to be much if any stronger after a few days than before they were united. I know of nothing that a woman can work at and make pay better than to take those weak colonies under her wing and nurse them into strong ones by the time the honey-harvest comes. Men-folks say weak colonies don't pay to fuss with—at least, some in their writings say so: but I think it does pay. They should know how to do it aright, as it is death to weak colonies to be handled in unsuitable weather, and to be improperly managed.

Women as bee-keepers should plan to have all house-cleaning and sewing done up, even before time to work with bees in the spring, so that the spring care may not be neglected, as well as to have all surplus receptacles ready that will be needed, and hives ready; for, very often, other work we do not think of will sandwich itself in; and we find, with the care of our own housework, the extra care of the bees is too much; and as it is with the housework which no woman likes to neglect, nor ought to neglect, so the bees are neglected in the spring, which takes away the profit of the year.

OFF YEARS FOR HONEY.

When we are convinced that there is to be a failure we do our painting and repairing of house, barns, vehicles, etc., so as to have as little of such work to do good years as possible.

Though it has often been mentioned in our bee journals and books, that it is the strong vigorous colonies that give the most honey, yet we are prone to forget that we can not have vigorous colonies unless we have vigorous queens. Last June, when bees were gathering honey, I could remember in almost every case where the colonies were working nicely in sections, that they had reared a young queen the year before; and the colonies with old or failing queens did but little in sections.

HONEY-DEW ON HOUSE-PLANTS.

I noticed on my house-plants this fall a sweet sticky substance that tasted like honey. I suppose it was honey-dew. The window where the plants were was spattered with the sweet substance. I washed it off then, and noticed, underneath some of the leaves, a little red cocoon about as large as the head of a pin; but I

saw no living insect. Last week I again noticed that some of the leaves on my oleander-tree were a little sticky, and a few of those little red cocoons, I should think they were, under the leaves.

BEE-FEEDERS.

Last fall, when we fed up some colonies for winter, we tried several feeders, and none gave better satisfaction than cheap tin milk-pans. If one buys quite a number they can be bought very cheap; and then we are sure of no loss of the syrup. We had cotton cloths over the top of the pans, and we filled them full and set them on top of the frames and covered the rest of the frames up, except large entrances for the bees to go above; and in one night they would take down two quarts or more, and worked vigorously until all was gone. We had some old wooden feeders we thought were glued and propolized so tight they would not leak; but if filled above, where tried, we found them leaking in the hive; and one that stood outdoors in the rain several days, out of which we had to pour the water, when put into the hive they let a gallon of rich syrup run out, and caused bad robbing of that colony the next day; indeed, it nearly ruined the colony, as the bees came in and took all the honey they had in the hive before we noticed the robbing was so serious. I mention the above fact to warn others to be careful of wooden or leaky feeders. This spring we intend to try large deep pie-tins, just shoved under the brood-frames, as we shall have to feed some. As our colonies are all set up an inch higher than in summer, we can take down a side board and shove the pie-tin under, first laying in the pie-tin a cotton cloth to make footholds for bees to walk out and in. A large pie-tin will hold from two-thirds of a quart to a full quart, and can be bought for three cents each, and will last a lifetime.

Roseville, Ill. MRS. L. C. AXTELL.

[Your suggestion in regard to why queens are destroyed after being clipped are, some of them, new to me; but I think you are no doubt right, my good friend.—I am glad to see that you agree so nearly with Dr. Miller and others in this matter of uniting weak colonies in the spring. A weak colony that is making progress, and is pretty surely building up, should be let alone. Two queens (in a very little time at least), will produce more brood than one queen; and if they are doubled up, one queen must take the place of two.—I wish to emphasize the danger pointed out, of opening and spreading the brood in chilly weather. It is like taking delicate plants from the greenhouse and putting them out into the frosty air.—Yes, the bee-keeper should plan certain kinds of work to be done when the honey does not happen to come.—Probably Prof. Cook can tell you the cause of the honey-dew on your house-plants, from the description you give.—Yes, I know that a tin pan can be made to answer the purpose of an expensive feeder; and this is the point I had in view when we made the machinery for making our bread-pan feeder. It is some trouble to fuss with cloths, etc. One day I found the women-folks washing out a lot of cloths that had been used over the tin-pan feeders. I soon figured up that the labor of washing them was more than the cloth would cost in the first place. Of course, where one has nothing else to do this might not be so bad; but we should be careful about letting hired help do work that costs more than it comes to. If you put your pie-plate feeders under the frames, there is a way to manage without being annoyed by the cloths at all. Have your pie-tins made just as large as the bottom of the hive; then have the sides reach high enough so that, when filled with syrup, the lower part of the frames will dip into it. A bee will never drown in such a tin pan as this, and you can fill it up by pouring the syrup on top of the frames, so as to run down between them. You want to have the lowest side of your tin in sight, however, so as not to get so much syrup in as to run it over. We have used such feeders very successfully; but it is a little trouble to get them out of the hive when you are through with them, unless your hive has a movable bottom-board. In that case, an assistant can lift the hive while you take out the feeders.]

HONEY FOR EXHIBITION PURPOSES.

A STANDARD NEEDED.

Mr. Root:—At the convention in Albany, the desirability of a standard of comparison in awarding premiums on bees at fairs and expositions was touched upon. It is a good idea, and I have long thought that a similar standard, or scale of points, should be furnished the judges of honey at such exhibitions. Better justice would be done exhibitors, awards being many times made without intelligent inspection. That is to say, they are made (with the best of intentions on the part of judges) in an off-hand manner. A case in point occurred at a State fair. After an award had been made upon a specimen of comb honey, some of the other exhibitors decided to examine it, when it was found that the case contained a few sections of white honey while the remainder was dark and inferior. The case was closed, and nothing, so far as I am aware, was ever said; but certainly the superficial examination of the judge resulted in injustice to exhibitors of better honey. If the idea should meet with approval it is perhaps not too late to induce officials to put it into the premium lists of fairs and expositions to take place during the coming summer and fall. Brought thus to the notice of bee-keepers it would have an educational value, the effect of which would appear in the better grading of honey for market. I submit the following scale for amendments:

HONEY—	Color. 5.	
	Body. 5.	
	Flavor. 5	15.
COMB—	Straightness. 5.	
	Color of capping. 5.	
	Completeness of capping. 5	15
Uniformity		10
Style		10
POSSIBLE		50

By "uniformity" is meant the closeness of resemblance in the sections composing the specimen. "Style" includes the attractiveness of section and case, also absence of propolis.

RECIPE FOR CANNING PUMPKIN, FOR MR. CHALON FOWLS.

Stew and sift the pumpkin, as for immediate use. Add sugar, ginger, and cinnamon, to taste. Return to the stove and add water if too dry. It should be somewhat soft to settle down in the can without air-bubbles, and the water can be evaporated when wanted for use. When boiling hot, pack solid in air-tight cans, and it will keep well.

HOW TO KEEP MOLD FROM CANNED FRUIT.

Perhaps it will not be amiss to make further comment on canning fruit. I have been very fortunate in exhibiting canned fruit at fairs, where many make inquiry as to my method. I very seldom have mold on my fruit, while many

with whom I have talked regard it as unavoidable. Mold is a plant. When it is found on canned fruit its germs were either in the can when the fruit was put in or they got in afterward. If the can was air-tight, which can be ascertained on opening it, the mold spores could not have gotten in, and must, therefore, have been in the can when the fruit was put in.

The majority of us use the Mason can with porcelain-lined top. They are musty when new from their straw packing, and, when emptied of fruit and stored upon the pantry shelf, there is abundant chance for them to become thickly sown with mold spores floating about in the atmosphere. It is almost impossible to thoroughly clean the tops and behind the porcelain lining. Mold flourishes where it can not be dislodged with ordinary scalding. However, hot strong borax water will destroy the germinating power of the spores, so I *boil* the tops and scald the cans in it the last thing before the fruit is put in. I shall use, hereafter, the Woodbury can, with glass top, made at Woodbury, New Jersey. EMILY E. WEST.

Flint, Mich., Mar. 12.

OUR QUESTION-BOX,

With Replies from our best Authorities on Bees.

QUESTION 183. *Where I live we don't usually have settled weather till well along in April. Sometimes my bees get uneasy early in March. If a warm day comes about that time, would you set out the uneasy ones and let them stay out, or would you put them back after a flight, or would you let them tough it through in the cellar?*

We would not put them back at any time.
Illinois. N. W. DADANT & SON.

If very restless, set them out; then set them in. If not very restless, leave them in until spring.
California. S. R. WILKIN.

"Tough it through in the cellar," but give plenty of ventilation and a drink. They get too dry.
Illinois. N. W. C. MRS. L. HARRISON.

I would take them out if the weather were warm, and let them stay out, unless the weather should turn cold again.
Louisiana. E. C. P. L. VIALLON.

I would let them "tough it" through in the cellar, and not set them out until outside bees were gathering pollen.
Michigan. S. W. JAMES HEDDON.

I would not set them back, and it would be a bad case if I set them out much before the usual time.
New York. C. P. H. ELWOOD.

Set out the uneasy ones, and give them protection with an outer case, and pack with chaff, fine-cut straw, or hay, or an equivalent.
Ohio. N. W. A. B. MASON.

It might pay in some instances to get the noisy ones away from the rest, and sometimes a flight will make them more quiet for a while. In such instances it will pay to take them out for a fly, and return. Early in March would be too early to leave them out, here.
Wisconsin. S. W. S. I. FREEBORN.

I think I would try to cool them off somehow, and let them remain until after the next cold spell; that is, for this latitude.
Wisconsin. S. W. E. FRANCE.

Give them water, and leave them in the cellar if they are healthy. But if they have diarrhea, setting them out for a flight, and returning them, might give them relief.
Vermont. N. W. A. E. MANUM.

Sometimes, and sometimes. If they were daubing things up I should incline to set them out for a flight, and put them back again. If they were tidy I think I should make them stay where they were, somehow or other.
Ohio. N. W. E. E. HASTY.

I don't feel entirely sure about it, but I think I'd let them tough it through. Last spring mine got that way, and I made a fire, heated the cellar, then opened every thing wide at night, and by morning they were quieted down.
Illinois. N. C. C. MILLER.

In my climate, let them "tough it through in the cellar." There is nothing gained by toting out and back again. If it is really necessary to put them out I would let them "tough it" outdoors.
New York. E. RAMBLER.

If I could take the uneasy ones out without disturbing the rest, I would give them a fly and return them. Usually this can not be done, so it is best to let them take their chances in the cellar.
Illinois. N. C. J. A. GREEN.

If I could not quiet them by cooling off the cellar—opening up cool nights—I would take the uneasy ones out and return them after a good flight. I do not believe this wise or necessary if we are cautious in our management.
Michigan. C. A. J. COOK.

If the above party would give his location, his question could be answered more intelligently. It appears to me, that, if I were a cellar winterer, I would try to quiet my bees in some manner until it was time to set them out for good. A saturated sponge on the entrance or on top of the frames answers the purpose sometimes.
Ohio. S. W. C. F. MUTH.

After trying all the plans yet devised for wintering bees in safety, my idea is this: Put the bees in the cellar early; keep the temperature at from 43° to 45° while they are in the cellar, and leave them undisturbed till you are ready to set them out for good—say when the pollen from soft maple and elm is being gathered by bees left on their summer stands.
New York. C. G. M. DOOLITTLE.

If the bees become uneasy in the cellar, and a bad condition is likely to result from it, they may be benefited by setting out on a warm day for a flight. But unless the weather *is* warm they will be damaged instead of benefited. Upon the whole the chances are about as good to leave them undisturbed until the weather is warm enough to set them out and leave them. If set out early, put back again, *especially if light.*
Ohio. N. W. H. R. BOARDMAN.

[Well, friends, I am a little glad to notice that you do not recommend very strongly carrying bees out and putting them back again, and I believe I agree with you. In fact, I think I

would not take them out and put them back, even if it did no good. And, by the way, I still think that, for localities like ours, I would not have any cellar or any out or in about it. When Ernest brings his bees out of his cellar, however, I may have more faith, for the past winter has been a trying one.]

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

MASTER LELAND IVES ROOT.

CARE OF GRANDFATHER AMOS IVES ROOT,

MEDINA, MEDINA CO., O.

My dear Leland Ives:—Unless you have an imagination beyond the ordinary, you can not imagine my delight at hearing from you. I am especially gratified that you have chosen for your stopping-place the home of my very dear friends, Mr. and Mrs. E. R. Root. As you become better acquainted with them I am sure you will like them. Demure as Mr. E. R. no doubt appears to you now, when he becomes better acquainted that little stiffness of manner toward you will disappear, and I think you and he will be very fast friends. Being so very nearly the same age, it is not strange that a warm intimacy should exist between him and me, and our mutual friendship for you will bind us still closer together.

Please give my love and best wishes to your host and hostess, also to your grandmother and grandfather, also to the circle of uncles and aunts. Yours as of old.

C. C. MILLER.

P. S.—Do be careful of your health, my dear fellow, and take particular care to wrap up well when you go out. Don't go in the mud without your rubbers. Have you seen A. I.'s windmill?

A BILL BEFORE THE MICHIGAN LEGISLATURE TO MAKE THE SPRAYING OF FRUIT WHILE IN BLOOM A MISDEMEANOR.

Mr. Root:—Please announce as early as possible in your paper, that there is a bill before the Michigan Legislature, which, if enacted, makes spraying fruit while in blossom a misdemeanor. There is some opposition on the ground of justice to fruit-men. Yet our State Horticultural Society and a second large association, the "Grand River Valley Association," have unanimously resolved urging the passage of the bill. Please urge all fruit-men to petition their senator, and the State legislatures generally, to vote for and pass the bill. The petitions should come from fruit-men. They are interested in preserving the bees, as well as are the bee-men. All well-informed fruit-men believe this fully.

A. J. COOK.

Agricultural College, Mich., March 27.

[We are exceedingly glad to see you moving along in this matter, especially as the State of Illinois has already got the matter well in hand. See page 326.]

HOW TO TELL ADULTERATED WAX.

What is the best way to tell adulterated beeswax, and in what way does grease or paraffine injure wax? J. H. A.

Andes, N. Y., Feb. 10.

[Friend A., we detect adulteration by the smell, and by chewing the wax. Beeswax and tallow will make very fair chewing-gum. But wax alone will crumble all to bits, and can not be chewed—at least very long. The addition of paraffine has somewhat the same effect; and even a very little paraffine makes the wax melt at a much lower temperature, so that it is entirely unfit for foundation. If the sample in question should, with very mild heat, become soft and mushy, you may suspect paraffine. Beeswax, however, is tough and leathery, and easily rolled at a temperature where paraffine would have no toughness at all.]

ILLINOIS STATE BEE-KEEPERS' ASSOCIATION.

The Illinois State Bee-Keepers' Association was organized on the 26th day of February, 1891, at Springfield. It officers elected were:

President, P. J. England, Fancy Prairie.

Vice-presidents, Mrs. L. Harrison, Peoria; C. P. Dadant, Hamilton; W. T. F. Petty, Pittsfield; Hon. J. M. Hambaugh, Spring; Dr. C. C. Miller, Marengo.

Secretary, Jas. A. Stone, Bradfordton.

Treasurer, A. N. Draper, Upper Alton.

A constitution was adopted, fixing Springfield as its principal place of business. Thos. G. Newman, of the *American Bee Journal*, was made its first honorary member.

Its executive committee are the president, secretary, and treasurer. The meeting at which the organization was formed was one of enthusiasm, and all seemed to feel that a day had been profitably spent. Adjourned at a late hour, to meet at the call of the executive committee. JAS. A. STONE.

Bradfordton, Ill., March 29.

WHICH IS THE CHEAPER—GRANULATED OR COFFEE A SUGAR?

I had occasion to buy a barrel of sugar for feeding bees yesterday, and intended to buy A sugar. The wholesaler asked for what purpose I wanted it, and, after saying for feeding bees, he said I wanted granulated, as there was more sugar for the money. Their sales of sugar, as he showed me by their books, run 5 barrels of granulated to 1 of all other kinds. Granulated is 6 per cent water, A 19 per cent. They had yesterday morning 27 carloads of sugar. I write this as I was intending to try A sugar as you sometimes use it. It is an easy matter to figure out the cost of *sweet* by using the percentage given. F. A. SALISBURY.

Syracuse, N. Y., April 2.

BEES ALL RIGHT IN THE CELLAR.

Bees are quiet yet, and seem to be all right in the cellar. Clover seems to be in good condition yet. Prospects are good for this season. I am not discouraged yet. I am building a shop 16x24, two stories, in hopes of a good crop this year. N. STAININGER.

Tipton, Iowa, March 26.

CATCHING FISH THAT WEIGH OVER 100 LBS., WITH A HOOK AND LINE.

Inclosed find a tarpon scale, taken from a tarpon caught by John D. Wattles, of Philadelphia, publisher of the *Sunday-School Times*. This fish was taken with a rod and reel, measured 6 ft. 6 inches, and weighed 130 lbs. Another was caught to-day by Leslie Pell Clark, weighing 110 lbs. The silver on scale is all that shows on the fish, giving it the name (by some) of Silver King. Bees are booming.

Sarasota, Fla., March 21. S. C. CORWIN.

DRAINING THE CARP-POND.

Tell Huber he should have been here in November when we drained our carp-pond, to help to take out the thousands of carp, from two inches in length to 20 inches. We now have them in one supply-tank, 10x10 ft., by 10 ft. high;

and some of the large fish we have in a low tank, so we can get them to eat. We had a nice one for Christmas dinner. G. J. KLEIN.

Conrad Grove, Ia., Jan. 24.

SPECIAL DEPARTMENT FOR A. I. ROOT, AND HIS FRIENDS WHO LOVE TO RAISE CROPS.

COMMON DRAIN TILE FOR CARRYING EXHAUST STEAM IN HOT-BEDS.

When I first thought of this I greatly feared that the dampness and wet of the steam would keep the hot-bed not only warm, but wet and soggy; that is, where steam is run through tile of only one-foot lengths, every joint permits the steam to get out more or less; but to my surprise and joy I found it just the other way. The ground dries over the tile a good deal as it does over a hot-air flue. Where the tile runs under a pathway between the beds, the ground is dry, even now while it is raining. The exhaust steam warms perfectly a string of beds 6 feet wide and 250 feet long, and the waste steam goes out at each end—enough in quantity to do considerable more work if needed. Strawberry-plants are now in bloom; corn and beans are doing nicely, even though we have had the most severe weather of the winter within the past two weeks. There has been no lack of bottom heat; but once or twice, when we omitted to ventilate promptly, the whole bed got so hot that some of the plants were injured slightly.

A NEW WAY OF VENTILATING HOT-BEDS AND COLD-FRAMES.

Now, it may not be new to the rest of you, but it is new to me. Instead of pulling the sash off, or even tilting them, simply spread them two inches apart. When placed thus, there is nothing that can be injured by the heat of the sun, neither is there any danger from quite a freeze; and in transplanting it gives the best results of any I have tried—that is, unless the sun is very hot. If we strip the sash clear off, the sun and wind would often dry up the ground too rapidly, and the plants look shriveled. A drying wind is rather worse than the sun. Now, by spreading the sash as I have mentioned, the wind is practically excluded, and yet the plants have a free circulation of air—almost equal to outdoors. But for some reason which I do not quite understand, these separated sashes almost always have more or less dew on the under side of the glass. Sometimes the quantity is so great that it falls in drops on the plants underneath, and with this amount of dampness they do just boom. To-day is the last day of March, and we are having a veritable April shower.

TREE TOMATOES.

As considerable has been said about these in our catalogues and some of the papers, we have thought best to give an extract from a little circular, as follows:

HOW TO GROW THE WM. MANSFIELD TREE TOMATO.

Get some rich old earth for boxes in your house, hot-bed, or greenhouse; sow seed, cover lightly, wet down well every day, keep warm with all the sun possible. When up ten days, transplant to other boxes, six inches apart, in dirt not less than four inches deep. Keep them wet, give all light and sun you can; and by the time it is safe to set them in the ground outdoors they should stand from twelve to twenty-four inches in height, with bodies one-half inch through.

Now for the ground, and how to prepare it. First select a spot as near your water as possible. Let your rows run east and west. Throw out dirt two spades deep, then put in three or four inches of night soil, if you can get it. If not, use hen manure and wood ashes, equal parts, or some other strong manure in the bottom of trench. Then fill up trench with the best dirt you can get, well mixed with old rotten stable manure; there must no strong, new, raw manure come in contact with the roots nor bark above the ground, as it will destroy them; but from bottom of the trench it is safe, and will throw up strength for the whole season. Now your ground is ready. Set out your plants (without disturbing any of the dirt around the roots) about eighteen inches apart; have the dirt in your trench a little lower than the sides. Have a strong stake for each plant, or a trellis, and tie them to it as fast as you set them. Water immediately, and ever after. Run a trough or small ditch from your pump to your plants; and every day, unless it rains, send a stream of water into the trench where your trees are set. Hard water, soft water, cold or warm water, are all right if they only have enough, either from the clouds or pump about once every day. As your plants begin to grow, just above each leaf will start a sucker. Let the top of plant, and only one or two of the best top branches grow so that you have not over two or three stems to run up. Now, by close observation you will see always that the buds for blossom show themselves on the tops of the trees, and a few inches below them; and just above each leaf the sucker starts. Nip off every one of these just as fast as they appear; also, as the lower leaves get brown and old, pick them off. Train the fruit as it grows, to the sun. Tie often and well. Let no useless wood grow. Give all the sun possible, and water, water, water—then you will be able to pick ripe fruit of the finest quality from about the Fourth of July until frost comes.

Johnsons Creek, Wis. WM. MANSFIELD.

The writer of the above has been, so he says, working for a new strain of tomatoes, to be grown like trees, for the last twenty years. During 1890 he said he had trees eleven feet high, bearing tomatoes weighing 2 lbs. 6 ounces. There is one thing in favor of these tree tomatoes, or tomatoes trained on stakes: The hens do not touch them, and they never get soiled or muddy. During the past season it was quite a task to wash and wipe perfectly clean our choice Ignotums. It would probably be rather late now to sow the seed, if you want *early* tomatoes. Very likely our friend Mansfield has plants to sell, for those who wish to try them the present season. We do not see any thing about the price of seed or plants in the little pamphlet from which the above was taken. I think the *Rural New-Yorker* stated recently that *any* tomato would make a tree tomato if tied to a pole, and trained and directed as above. During a dry season I am inclined to think the directions given—"water, water, water," a great help, provided we have the sunshine to go with it.

HOW BOOKS HELP.

I received the books I sent for, and I must say it would have been dollars to me if I had known of the A B C of strawberry culture. We bought a small farm near the city of Alpena, two years ago. There was something over an acre of strawberries on the farm. They did fairly well; but not knowing any thing about the care of strawberries we did not manage right. My husband is a sawmill man, and I do the farming with the help of a boy 18 years old. We are two miles from the city. I send the berries in three times a day through the busiest of the picking.

MRS. A. E. MONTAGUE.

Alpena, Mich., April 2.

TERRY'S STRAWBERRY CULTURE.

The strawberry book is a jewel. Every farmer should have a copy, especially if he has children. Friend Terry should live in California, where he can have strawberries at least seven months in the year, and some, I hear, do better than that. One great secret of his success is his thorough cultivation, especially after every rain, which causes the ground to retain moisture. Many farmers east make a mistake

in thinking no need of cultivation unless there are weeds to kill. Here in this long season of dry weather we easily see the benefits of cultivation, which is, practically, mulching the ground with fine earth for retaining the moisture. The harder the rain the harder the ground is packed; and the quicker it dries out, comparatively, unless cultivated.

Lakeside, Cal., Mar. 23. F. C. CROWELL.

OUR HOMES.

Lord, when saw we thee a hungered, and fed thee? or thirsty, and gave thee drink? When saw we thee a stranger, and took thee in? or naked, and clothed thee? Or when saw we thee sick, or in prison, and came unto thee?—MATT. 25:37—39.

I had it in mind to write something this time in regard to the happy surprises that are continually falling to the lot of the faithful, earnest Christian; and then the next thing was, to find a text which embodied the thought. When I found it in my well-marked Bible I saw the very text I wanted was already so plainly outlined with a pencil that it must have been used before. Never mind; I think it is just what I want to-day.

For several years before I accepted Christianity, one of the uppermost thoughts in my mind (perhaps I might say *the* uppermost) was, that the world was not giving me due credit. I would say to myself, and even to my friends, "Here, I have invented this, that, and the other, and here it is described in this and that bee-journal, and no credit given me whatever." Again, I would dwell on the fact of what I had done for different people, and not a word of thanks, and no expression of gratitude. Dear friends, did you ever get into this attitude of mind? I might go on giving you quite a list of the ways in which I used to think I was not getting my just dues, or did not have a fair chance; but the subject is so painful to me, and, in fact, I feel so much ashamed to think that I ever cherished such ungratefulness and such preposterous egotism in my heart, that I would fain let it drop. I remember once of a distinguished lecturer from some of the great cities, who visited our town. Some friend brought him into our establishment, and introduced him to me. Now, here was an excellent opportunity for me to *hear* a great man talk. But I remember quite vividly how I occupied the whole fifteen or twenty minutes he stayed at our establishment, by telling him what wonderful things *I* had done. In fact, I hardly gave the good man an opportunity to say any thing himself at all, even had he been so disposed. Very likely some of you will say, "Why, my good friend Root, are you quite sure you have entirely gotten over that trait of character even now?" I know very well, my friends, I have not. It is not an easy thing for anybody to get *entirely* out of the ruts and failings that have clung to them for a good many years. The grace of God has helped me, however, so much in this respect that I feel as if I wanted to tell you something about it.

Before I became a Christian, if anybody trod on my toes, or trespassed upon my rights, I was ready to fight, or to go to law, without a moment's warning; and the saddest part of it was, that a good many times I imagined they trod on my toes purposely, or trespassed on my rights purposely, when they had no such thoughts or intention. By the way, do you know of any thing much sadder than to have a friend who laments that everybody is all the while trying to steal what belongs to him? It does not matter whether it is the corn in his crib, or the eggs his hens have laid, or even the thoughts of his brain; if he gets into the idea that he has got to fight continually for his just dues all through life, the spectacle is a sad one. A great part of the exhortations of God's holy word are exactly to the contrary. How many texts do you suppose I could quote right along on this line? "Cast thy bread upon the waters;" "Give, and it shall be given unto you;" "He that findeth his life shall lose it: and he that loseth his life for my sake shall find it;" "Thy Father which seeth in secret shall reward thee openly;" "Do good and lend, hoping for nothing again."

Before my conversion I was greatly disturbed if people talked about me, especially if they said any thing that was not true, and then I thought it incumbent on me to follow up any such report, and go to the bottom of the thing. When any thing got into the papers reflecting on me, I was ready to fight the editor, and prosecute the man who told the untruth. I remember when a rival in business put in something abusive, and I could hardly sleep the whole night after. Now, please do not think I am bragging when I tell you of how I was helped out of all this "miry clay." Remember, *I* did not do it of *myself*, therefore the credit or the praise can not in any sense belong to me; but to *Christ Jesus* shall we ascribe all the glory and praise. After my conversion I *forgot* about self; in fact, I did not *care* about self. Why should I? The promises of the Bible, without number, exhorted to the contrary. He that loseth his life shall find it. I *did* lose my former life, and I *did* find the new; and this finding of the new life constituted "the happy surprises" that I wish to tell you about to-day.

In a great measure, the *desire* to fight back was gone; and, in real truth, it was *not* very hard to *love* my enemies and to do *good* to them that hated me. I did not find it very hard to do *good* and *lend*, hoping for nothing again, for I was trusting in Christ Jesus, and I fully believed he would take care of the outcome and the result. Many of you who have read GLEANINGS *know* how it turned out. "When a man's ways please the Lord, he maketh even his enemies to be at peace with him," and it happened *just* so. Many of the pleasant surprises I have had come in the way of kind words from those who have formerly been at enmity toward me. People said I was queer and odd and eccentric, and that they did not understand me at first; in fact, I was not *trying* to have them understand me. I was trying to have them understand *Christ Jesus* and the holy Scriptures. A few days ago our good friend Dr. Tinker paid us a visit. He said to me, "Bro. Root, you may remember that I have not always felt as friendly toward you as I do now. I did not understand you. Since I have become acquainted, and know you better, it makes a vast difference; and there are a good many who do not understand you, even *now*. If they could come here and go all around, and see you when you are at work, they would change their minds, just as I have done."

In that new life, instead of being afraid of being put in the papers, I did not care whether I was put in the papers or not. Now, please do not misunderstand me. Do not imagine that I was one of the "don't care" sort. My *care* was, however, that I should in no way dishonor the Master. I was in great fear every day of my life that I might not be *truthful* and *honest*, and *pure* in *heart*. But after I had worked and prayed through these temptations to be untruthful, or dishonest and greedy, I did not care for the result, for that, in fact, rested with Him whom even the *winds* and *waves* obeyed. Why

should *I* trouble myself? Before conversion I was afraid that the great outside world might point out some things about me that I would not have anybody know for the world; but *after* conversion I had nothing to conceal. When there were rumors that something in my past life might get into the papers, I decided, as some of you may remember, to put it in print *myself*, and then I should never be afraid that it might come up at any future time. About this time I was in pursuit of information of a certain character, and was directed to a certain place. My informant added, also, "You had better not be *seen* going there, Mr. Root: for if you are, you may get 'talked about,' and you know *you* could never stand that." And then the bystanders had a big laugh, as they supposed, at my expense. There was a moral to it, however, for every one of them recognized that *all fear* in that direction was gone. My attitude was then, and I hope and pray is still, that, when the truth will do harm, let harm *come*. We read in the 112th Psalm, "He shall not be afraid of evil tidings; his heart is fixed, trusting in the Lord; his heart is established, he shall not be afraid." And then in the 91st Psalm we read: "He shall give his angels charge over thee, to keep thee in all thy ways. They shall bear thee up in their hands, lest thou dash thy foot against a stone."

One of the great hindrances to these happy surprises I have been telling you of is the disposition, not only to lose faith in God, but to lose faith in your fellow-men. And, by the way, there is something really wonderful in the way this temptation to be uncharitable will follow one, and continue to hang to him, even after he has had experience again and again that should teach him better. I have been between fifteen and twenty years battling against this besetting sin of mine. If anybody should ever have learned by abundant experience to look out for danger and delusion right here, I am that one. Let me give you an experience of yesterday:

Circumstances seemed to indicate that a certain individual was purposely planning hindrances in our way. I watched him narrowly, and finally I had proof of it (or at least I supposed I had) in plain black and white. There could be no mistake about it. I had his own handwriting in my fingers. It first gave me a feeling of pain that he should, for any reason, real or imaginary, be so perverse and wicked. Then I began planning unconsciously what I should do to stop it. It disturbed me so I could hardly talk or eat my supper, yet I decided that it was not worth while to trouble my wife about it. Then I remembered the many grievous mistakes I had made just in this line, and I finally submitted it to my wife's better judgment. She said at once, "I am sure you are mistaken."

"But, my dear wife, how *can* there be a mistake? Oh, how I wish there *were* some chance for him! But right here are the *facts*."

"I can not help it. I am sure this friend of ours has not deliberately and purposely done this thing."

I felt a little relieved; but the facts were so straight and clear, I placed the matter before another good friend. This friend said just as Mrs. R. did.

"It can not be, Mr. Root. I do not know what it means, and it is hard to explain; but there is certainly a reason for it that we do not see."

I had decided, therefore, out of respect to these two good friends of mine, that I would ask the one who seemed to be going wrong, for an explanation. I decided, too, to put it very mildly, and to assume, for the time being, that no wrong had been premeditated. What do you think the result was? Why, it was just the old, old story—nothing was wrong at all; or, perhaps I should say, nobody was wrong at all, except my own self, and the bad, uncharitable condition of my own heart. In the piece of handwriting I had looked at so suspiciously there were two little characters I had overlooked, and these made it all plain and simple. Oh how thankful I felt that I had listened to the advice of these two friends, whose minds were in no way biased, as mine was for the time being by my old foe and old enemy. Now, then: Jesus knew all about this. He knew exactly where we should be likely to be tripped and entrapped; therefore he said, as a preventive—as a safeguard—perhaps I might say as a note of warning, "Love ye your enemies; do good to them that hate you," etc., knowing *beforehand* that we should be prone to look for enemies where none exist, and that we should be very likely to imagine people hated us when no such *hatred* existed; so you see that, if we listen to these words of Scripture, we shall, *without knowing it*, escape Satan's snares; and in this way we shall meet with the happy surprises that I have been telling you of. We shall find warm friends where we had been looking for foes, and we shall discover good loving hearts where Satan whispered only envy and enmity existed.

In our issue for March 15, page 226, I published a letter from friend Braley. I did it with a feeling that there had, perhaps, been too many kind words in GLEANINGS, and not enough of the opposite sort. I feared the impression was going out among my good friends that the bee-keeping world were *all* pleased with our establishment, whereas that is not true. There are quite a few who do not agree with the majority, and justice and *truth* demand that they have a hearing. I did not feel unkindly toward friend B., but I felt sorry to know that he did not understand me better, so I replied to him in a foot-note. By the way, may I suggest that editors, as a rule, *are* afraid of adverse criticism? We put in plenty of notices in regard to the *value* of our journals, and how well they pay as *advertising* mediums; but when somebody writes a complaining letter, and says he "never got a *cent*" in response to his advertisement, it is a little against human nature to publish it. Now, it seems to me that our patrons have a right to *all* the information we can give in the matter. If we wish to be *honest* and *square* we should give *both* sides; therefore *I* rather enjoy giving *both* sides. Why, bless you, dear friends, it never hurts one nor hurts his business to be *honest*. See the promise in Isaiah 54: 17:

> No weapon that is formed against thee shall prosper; and every tongue that shall rise against thee in judgment thou shalt condemn. This is the heritage of the servants of the Lord, and their righteousness is of me, saith the Lord.

But, please believe me, I had not the *remotest thought*, when I published friend Braley's criticism, that it would be the means of bringing me the kindest expressions of abiding friendship, high esteem and gratitude, that I ever got in my life. Had I been *seeking* praise I could not have invented a better scheme than the one I innocently and unconsciously took, of publishing that letter. In fact, it brought a *series* of "happy surprises," and quite a few from good friends whom I longed to hear from, but whom we could not get to write. I did not feel hurt nor troubled because he accused me of being a hypocrite, for I am greatly afraid that hypocrisy *does* get into my composition now and then; but I certainly was not bright enough to recognize that nothing in this world brings to light one's friends like unjust persecution; and I suspect that herein is one of the

truths at the bottom of one of my old favorite texts: "Blessed are ye when men shall persecute you and revile you, and speak all manner of evil against you falsely for my sake." Especially if the one who is persecuted unjustly takes it quietly and pleasantly, and does not say a word back, nor retaliate in any way. May be I am letting out a great secret here; in fact, I rather *hope* I am; for if I can make plain to you the wonderful secrets embodied in the Bible texts and promises—if I can, in short, point you to the *Lamb of God*, who, when *he* was "reviled, reviled not again," why, it is just the work I *love* to do rather than any thing else God has ever called me to in this whole wide world. And now let me finish by giving you some extracts from kind letters that have come since the above was published:

Friend Root:—I have been thinking of writing to you for a long time, as I have good evidence that you still retain recollections of your brief visit with me, and might be interested in knowing about my welfare; but many cares have prevented, and might still do so but for some things which appear in the March 15th issue of GLEANINGS. They "sort o' riled me," and I will refer to them later. Providence has, since my mother's death, granted me a boon which does not fall to the lot of very many, to judge from appearences—a good wife, who is, in the true sense of the word, a helpmeet. Home is, once more, more than "a place to stay;" and I am sure that, if you conclude to come to California again, you will find a happy spot when you visit us. I have about as many bees as formerly, but the strawberry patch has given way to a thrifty young orange-grove, and a three-acre orchard of figs and apricots is growing finely above the house.

Now, in regard to the articles of criticism which appear in GLEANINGS. It does seem a little peculiar that some people do not use more good sound sense in arriving at conclusions; for instance Mr. Braley, who gets the shoe on the wrong foot *entirely* with his "big I." It would seem that the individual who demands that any publication shall be gotten up exactly in the line of *his* likes and dislikes (irrespective of what its other readers may require), bristles all over with egotism, or "big I"-ishness; and in writing as Mr. B. did, he shows about as much consistency as the person who goes to the butcher's shop after beef steak which he *likes*, and proceeds to abuse the proprietor for keeping *sausage*, which he does *not* like. There has been information in the last few numbers of GLEANINGS worth a dollar to *any* bee-keeper; and, for that matter, valuable to all; and if one finds something "obnoxious" occasionally, I know of no law to compel him to read it.

As to Mr. Luther's article, I am also a member of the association mentioned, and was present at the meeting Jan. 8th. I take issue with him. If Mr. L. takes his honey to market and receives a bid of 4 cents, does he consider it "dishonorable" to inform another buyer that he has such an offer, and then sell to him at 5 cents? Certainly not. When business throughout the country is run on principles as nearly parallel to the Golden Rule as is A. I. Root's, we shall be a long way nearer the millennium than at present. S. B. WOODBERRY.

Verdugo, Cal., Mar. 23.

Dear Bro. Root:—I feel it my duty to address you to-day as a Christian brother; and if we do not buoy each other up in this Christian warfare, and fly to each other's assistance, we do wrong, and I consider it a sin. God is our refuge and ever present help in trouble. I believe it; but we do like our fellowmen to understand why we so talk, why we so act. But they can not and will not, and then fling mean and small words at us. How can a Greek and Frenchman understand each other's language? How can one who is not a Christian know of the love that God has placed in his soul for Christ and his fellow-men? But to know and feel that you act and say all for Christ's sake is a great blessing in itself.

I have, as an officer in my church of 300, given my views most emphatically against all fairs, banquets, and concerts in God's house, to raise money to carry on his cause. I don't believe in it. The Holy Spirit moved me to take this stand, so very contrary to my former views, that it has called down from the members such words as to trouble me; but I can stand with Christ's aid, as I know it cometh not from the Devil, but from Him who gave his Son for us. The power of the Spirit worketh wonders; and I desire it, oh so much! Now, this sympathetic bond is why I write to you. After reading Mr. Braley's letter, page 226, I feel that you must want some sympathy. It relieves me to give it. They don't understand you. Let them talk. It makes you stronger for Christ's service. It all redounds to the glory of Christ. You are a great instrument in his hand. Your Home Papers have ever been a helping hand to me in my business, in my prayer-meeting, and in my home; and I shall pray now for you and yours, that you may continue to serve Christ in your way, under the guidance of his Holy Spirit, all your days, and at last be united with Him who loves you—loves *you*—more than you ever dreamed of, and has now a place ready or prepared for you. This letter requires no answer, and is not for publication.

The last brother who writes, says the letter is not for publication; and it is quite evident to all that he had no thought of its being used in that way when it was written. I trust, however, he will pardon me when I tell him that it strikes the point I wish to illustrate, much more fully than any of the other kind letters received in answer to our good friend Braley.* Perhaps I should also apologize to our readers for permitting any thing to get into print containing such extravagant praise of myself as the last few words. But it is these few words that bring out the wonderful truth in the text I have quoted: "Blessed are ye when men shall revile you and persecute you," etc. Now, please note, the blessing is promised when this persecution is *unjust* or *untrue*, and when it comes *because* of Christ Jesus, or for *his* sake. If you are guilty of some wrong act, and you are persecuted and reviled because of that, no blessing is promised. It is only when we are entirely innocent. And, now, please note again, the greater the injustice you suffer, the *greater* will be the blessing. Many of you, probably, will refuse to believe this; but see how it has been verified in my own case, in the promise before us. Friend Braley said some spiteful things about me, because of the Home Papers, because I, in my poor way, *tried* to hold up Christ Jesus as an example for the world. Did it hurt me? or did anybody think the less of me? Quite the contrary. It stirred up friends from the Atlantic to the Pacific, and induced many to write encouraging words who probably would not have said *any thing* otherwise. Several have seemed to fear that I might be induced to drop the Home Papers, and sent in vehement protests and kind words like those I have given you. The 22d and 23d verses of the 6th chapter of Luke contain some words that have always seemed to me to be a little extravagant—at least, I have been tempted to think there might be some mistake about it. They are as follows:

Blessed are ye when men shall hate you, and when they shall separate you from their company, and shall reproach you, and cast out your name as evil, for the Son of man's sake. Rejoice ye in that day, and leap for joy; for, behold your reward is great in heaven; for in like manner did their fathers unto the prophets.

The words I allude to are, "Rejoice ye in

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* Perhaps I may add, that the writer of this last letter has been well known to us for several years. Ernest and John have met him personally, but we were greatly astonished, all of us, to receive *such* a letter from one whom we had hardly any reason to suspect was even a professor of religion. And may I just drop a word of caution right here to our brother in regard to church fairs? Even if he is wholly in the right, would it not be well to heed the injunction, "Not by might nor by power, but by my Spirit, saith the Lord of hosts"? These things are much more easily set right by a loving and gentle hand.

that day, and leap for joy." What a contrast! My friend, if you have ever lain awake nights because somebody accused you of something of which you were entirely innocent, do not do so any more. Have faith in the Bible promises. If there is any *truth* in the unkind words, then bestir yourself to make them *untrue*. If somebody has accused you of something that you never did at all, look into your own heart and see whether you ever *thought* of so doing. If you did, there is where you are to fight your enemy. Jesus said, in connection with this very thought, "But I say unto you, That ye resist not evil." Do not trouble yourself about the evil at all, and do not waste your energies in even making a reply. Turn all your thoughts, and do all your fighting, against the evil in your own heart. *Keep busy* in resisting every encroachment of the evil one, and then shall come these happy surprises that I have been telling you about to-day. Then will you feel like saying, when the dear Master sends you—yes, here in this world—more wonderful blessings than you ever thought of or dreamed of—

Lord, when saw we thee a hungered, and fed thee? or thirsty, and gave thee drink? When saw we thee a stranger, and took thee in? or naked, and clothed thee? Or when saw we thee sick, or in prison, and came unto thee?

TOBACCO COLUMN.

CONDITIONS UNDER WHICH WE GIVE SMOKERS TO PERSONS WHO STOP USING TOBACCO.

First, the candidate must be one of those who have given up tobacco in consequence of what he has seen and read in this department. Second, he promises to pay for the smoker should he ever resume the use of tobacco in any form, after receiving the smoker. Third, he must be a subscriber to GLEANINGS. Any subscriber may, however, have smokers sent to neighbors or personal acquaintances whom he has labored with on the matter of tobacco-using, providing he give us his pledge that, if the one who receives the smoker ever uses tobacco again, he (the subscriber) will pay for the smoker. The one who receives the smoker in this case need not be a subscriber to GLEANINGS, though we greatly prefer that he be one, because we think he would be strengthened by reading the testimonials from time to time in regard to this matter. The full name and address of every one who makes the promise must be furnished for publication.

OBJECTIONABLE PICTURES IN PACKAGES OF TOBACCO.

Mr. Root:—I inclose with this two pictures given to me by men in the shop where I work. They come in papers of tobacco that are sold to anybody who wants them, old or young, and are circulated everywhere. No doubt you will find the boys, if not the girls, in your schools, are too well acquainted with them. I believe they are supposed to represent theatrical costumes, and may be inside of the law; but if so, the law needs to be changed, and I thought perhaps you might be able to start an effort in that direction.

New Jersey. B. C. W.

[Now, then, if there is any man (of course there is not a woman) who would defend the use and sale of tobacco after the point made by our good brother in the above, we should be glad to hear from him. The very fact of itself, that evil, vicious men have chosen tobacco packages as a vehicle for their infamous work, is enough to condemn it. The Christian man (or, perhaps I should say, the professors of religion) who sell tobacco, knowing that the packages contain these objectionable pictures, should hide their faces in shame if they do not give up at once and for ever this traffic. The plea that there is money in it is no excuse at all, but rather the contrary. A good friend of mine who got hold of some of these vile sheets, put them in a letter and mailed them to a grocer who advertises prominently that he makes tobacco a specialty. She asked him if he could consistently sell any class of goods that included things of an immoral tendency like these, telling him at the same time that the pictures she inclosed came out of the packages of tobacco bought at *his store*. At the present writing he has never made any reply whatever.

Bro. W., you are right about it. If these things are not against the law, the law certainly needs *mending*. Only last week a Medina Co. boy was arrested for printing and sending out obscene literature made on a little amateur press. I was told that the full penalty of his crime would be five years in the penitentiary. His father got him clear, however, by the payment of $500. This boy scattered his infamous productions among the schoolchildren. Now, if it is five years in the penitentiary for printing and disseminating vileness and obscenity, why is it that our tobacco-dealers (providing they have no conscience) are allowed to go scot free in this matter of putting out, with their tobacco, obscene pictures? The pictures are exactly the kind calculated to stir up the worst and the most dangerous passions in human nature. I know by experience the extreme harmfulness of like pictures—pictures shown me by thoughtless or vicious schoolmates, which have haunted me—or at least the memory has—through life. And even since I have become a Christian I have prayed again and again that God would wash away and obliterate the recollection that has followed me for toward forty years.

Friend W., I thank you for the confidence you place in my ability to do something in this line; and may God help us to use our privileges. If Prof. Cook, Dr. Mason, Dr. Miller, R. L. Taylor, and a host of others whose names have weight, would start a petition to make it a penalty to put this stuff in tobacco packages or anywhere else, I think there is no doubt but that we might succeed. Our excellent Postmaster-General, Mr. Wanamaker, is wide awake and in dead earnest in excluding every thing of this kind from the *mails*. Therefore the enemy is making every attempt to reach boys and young men through other avenues; and with satanic aptness and ingenuity, they have decided to put it in *packages* of *tobacco*. May God help us.

My son, Wiley H. Barbee, has quit the use of tobacco, and he thinks he is entitled to one of your smokers. If you think he is worthy of one, please send it to my address, and I will see that he gets it. DANIEL BARBEE.

Glenwood, Ia., Feb. 26.

Please send a smoker to Albert Donaldson, Courter, Miami Co., Ind. He has quit the use of tobacco. If he ever uses it again I will pay for the smoker. I have not broken my pledge yet, and never expect to. CHAS. CRANING.

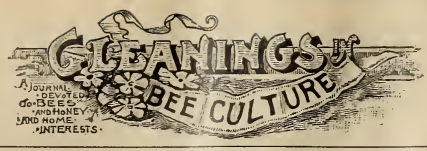
Courter, Ind., Jan. 26.

Through the influence of the Tobacco Column I have concluded to quit the use of tobacco. If you will send me a smoker I will never use the weed again; but if I should fail to keep my promise, and ever use tobacco again in any form I will pay you for the smoker.

Morgan, Ky., Feb. 23. HENRY C. CLEMONS.

Inclosed find $2.00. Take enough out to pay for a Clark smoker, and the rest apply on GLEANINGS. The smoker is one I ordered sent to a man some time ago who had quit the use of tobacco; but as he has broken his pledge I shall have to pay for the smoker or break *my* pledge. E. C. EAGLESFIELD.

Berlin, Wis., Feb. 26.



Great peace have they which love thy law, and nothing shall offend them.—Ps. 119: 165.

ON account of the quantity and excellence of available matter we enlarge again to 32 pages. Be sure to read the discussions pro and con on fixed distances and wax secretion in this issue.

THE advantage of having a practical bee-keeper in the halls of our legislatures is illustrated on page 326. A few such laws will have a wonderful educational influence in favor of our pursuit.

DURING our spare evenings we have been reading with profit and delight the "Mysteries of Bee-keeping," by Quinby. We have been charmed with the magnanimous spirit of Father Quinby.

WE must really apologize for calling our friend George H. Ashby, of Albion, N. Y., George H. Ash*mead*, in our N. Y. State convention report. The former says he has been getting a great many letters directed to the latter.

FIXED frames have been and are used in England almost exclusively, among bee-keepers; and in looking over the back volumes of the *British Bee Journal* we noticed that our British cousins have tested and tried almost every thing conceivable in the line of fixed distances.

WE have just had a call from Mr. R. F. Holtermann, who has recently attached himself to the bee-keepers' supply department in the firm of E. L. Goold & Co., Brantford, Ont. Mr. H. was former Secretary of the International Bee-keepers' Association. He is a bright and progressive bee-keeper, and will be a valuable addition to the Brantford firm.

ONE of the biggest pieces of folly is to send for bees long distances, by express. You can just as well get improved strains by getting queens by *mail*, and introducing them into your hybrid or black stocks. Haven't got any common bees? Buy some of a neighbor—that is, if you want to start in bee-keeping; get a few hives in the flat, of your nearest supply-dealer, and then get your pure Italian stock by mail, wherever you like.

HOPE is the word engraven on the heart of every bee-keeper at the beginning of every season. "We are going to have a good season this year," and so preparations are made. Without hope or expectancy there would be no preparation, and consequently no honey crop. Without bees and proper appliances at the right time, a big honey-flow does not amount to much; and so it behooves us to be ready for whatever may come.

OUR yellow five-banded bees were the first to be numbered among the dead in winter losses. Our apiarist says the three colonies we had of them had evidently died very early in the winter. After all, it may have only *happened* so; but still there seems to be a sort of opinion prevailing, that the darker bees are better for wintering and better for honey. The next two years will tell us more about it. A. E. Manum attributes his successful wintering largely to his leather-colored strains.

THE Hubbard section-former is a good machine—the best of the kind we know of. We let the one we had in use go for an order—the only one we had, and, oh my! what a scold the girls made! They didn't like to go back to the old way of folding sections. We now have plenty in stock.

"SOME patent-hive men," says a correspondent, "are like a dog with a bone that has no meat on it—ready to snarl and bite, the more especially when the bone is entirely worthless." This is a very true saying. Does some patent-hive man take offense at this? Well, he mustn't put the shoe on, if it doesn't fit. Observe that he doesn't say *all* patent hive men "are like," etc.

MR. F. H. MCPHERSON, of the *Canadian Bee Journal*, whose fall upon the ice was mentioned recently in Stray Straws, is still unable to resume his duties, and is at present under the medical care of an eminent physician in Toronto. The accident was more serious than was at first anticipated; but it is hoped that, with a complete rest for a time, he will soon be himself again. We extend our sympathies to Bro. Mac.

PERHAPS some of my friends may accuse me of playing second horn for Mr. Elwood and Mr. Hoffman. Well, if I am, I am in good company. They are both intelligent and extensive bee-keepers, and they have no ax to grind. Outside of their general interest and the welfare of the pursuit, it matters very little to them whether their suggestions are adopted or not. E. R.

QUITE by accident, this seems to be something of a topical issue. Notice the discussions, pro and con, on wax secretion, and on fixed distances. No more valuable subjects could be discussed than these. On the solution of the wax question hinges the much or little use of foundation, or the value of a surplus of empty combs. It may not be possible just at present to settle the fixed-distance question; but the discussion shows how honest and good men see things differently.

WE have received scores of congratulations from friends and bee-keepers all over the country, over the advent of our Easter offering, a baby boy, Leeland Ives. To one and all we extend our hearty thanks. You will pardon us, but we want to copy a little bit from a letter from Mr. Elwood, who, after extending his congratulations, adds:

Speaking after the manner of bee-keepers, I trust you will find that a moderate increase is not only best in securing to you the greatest amount of the honey of life, but equally good in maintaining the old stocks in the greatest vigor. P. H. ELWOOD.

Starkville, N. Y., April 4.

DEATH OF MR. COWAN, SON-IN-LAW OF L. L. LANGSTROTH.

Dear Friend:—My son-in-law, Hugh C. Cowan, left us this Sabbath morning for the better world. His health gave way more than a year ago, and for the last few months he has been confined to the house. His disease was consumption. He died in the blessed expectation that, when absent from the body, he should be "present with the Lord."

Yours affectionately,

Dayton, O., March 22. L. L. LANGSTROTH.

Dear friend, it is not a sad thing to die when one dies in the blessed faith, as mentioned in the above. Neither is it, in one sense, a sad thing to bid adieu to these friends—certainly not when we think of what severe trials it must be to those who live and die without any faith whatever in a kind and loving Providence. May God be with you and sustain you all, as I know he will. We are very glad, friend L., to

know that you are feeling well enough to send us this message.

LOOK OUT FOR THEM!

SOME time in November last we received the following:

Mr. A. I. Root:—Please send us ten copies of A B C of Strawberry Culture, by Terry, at your earliest convenience, and at lowest rate.

OUR COUNTRY HOME.

88 Fulton St., New York, Nov. 12, 1890.

Along with it came a very neat-looking rural paper, styled *Our Country Home*, affirming that they had a guaranteed circulation of over 100,000 copies monthly. We therefore filled the order. Since then we have sent repeated statements, and finally drew on them, as a last resort, telling them that we should publish them unless they settled up their little account of $2.05. As they do not even yet so much as "peep" by way of reply, we think best to give this caution. Perhaps we might add, that neither Dun nor Bradstreet quotes any such institution.

NO MORE HELP WANTED.

PLEASE do not write us asking what the "chances" are for employment in our establishment if you move to Medina. It is not possible for us to give places to a quarter of the applicants right here at home, and I have repeatedly so stated in our county papers. Notwithstanding, people do move here and bring their families, sometimes waiting a year, and, in one or two cases, even two years, for a possible vacancy. Then they move away, and I fear they sometimes feel hard toward me. In view of this it seems to me the kindest thing I can do is to tell you that we have quite a bookful of applications all the time. If these people who apply for places were skilled mechanics in almost any line of trade, the prospect would not be so poor. But I believe that skilled workmen in any department usually have plenty to do, with good pay. I do not know what is going to happen to our people if this matter of serving an apprenticeship and learning a trade is to be abandoned entirely.

THE MICHIGAN FARMER, ON BUCKWHEAT.

AN exchange says:

The *Michigan Farmer* says that "it is very apparent that Japanese buckwheat is not going to take the place of American varieties." This conclusion is based, in part, on the experience of a correspondent who says, "The flour is dark, and will not bake good cakes;" and he can "sell it only for chicken feed." He adds: "I have raised it for three years, but am through now."

In commenting on the above, friend A. C. Bugbie, of Lochiel, Ind., asks us:

What do you think of this? I have raised about 1500 lbs. of buckwheat flour this winter, raised from the Japanese variety, and it is of prime quality.

Well, friend B., I will tell you what I think the correspondent of the *Michigan Farmer* had better do. I think a change of cook for three years, rather than a change of buckwheat, would change his mind in the midst of these changes. The Japanese flour has been used, not only in our lunch-room, but all over Medina, for two winters past; and, besides that, we have reports from it from almost all over the world, and it certainly is not true that the flour made from it is in any respect inferior to the common.

A VISIT FROM MR. PARKS, OF THE G. B. LEWIS MANUFACTURING CO.

WE have just had a very pleasant call from Mr. Chas. E. Parks, who is manager and largest stockholder in the G. B. Lewis Co. at Watertown, Wis. He has just been on a business trip to New York. On his return home he stopped at W. T. Falconer's, in Jamestown, N. Y., and after making them a call he dropped in upon us unexpectedly. Mr. Parks is a man of business, and a hustler. We were somewhat surprised to learn that they were turning out from 100,000 to 120,000 sections a day. These are all sawed on four automatic machines, the first of which cost the company $3000, and the next three about half as much each. They probably make twice as many sections per day as any other firm. Our output is from 40,000 to 75,000 per day. But the G. B. Lewis Co. make hives, frames, sections, and shipping-cases only, those being their specialties, while the rest of us who make a smaller number of sections per day are making every thing used by the bee-keeper, whether wood or metal. The company now employ about 125 hands. We are glad to add that the sections made by them are second to none in the market.

FOUL BROOD SPREAD FROM COMB FOUNDATION; IS IT A CAUSE FOR ALARM?

ON page 447 of the *American Bee Journal*, Mr. S. Corneil, of Lindsay, Ont., Canada, holds the opinion that the disease may be spread in that way. He gives some interesting figures, showing the temperature at which spores and fully matured microbes may be killed. He says it has been ascertained that the death-point of the most resistant fully matured microbe is 140 degrees, and that the *spore* of said microbe could not be killed under a temperature of 257 degrees. Wax, he says, melts at a lower point than 145 degrees, and he adds that, in sheeting it for foundation, the wax is kept at a temperature as near the congealing-point as possible; and he concludes by saying, "There is good reason for believing that foundation has been sent out which has never been heated up to 190, much less to 257. It is highly probable that such foundation would contain germs of foul brood, if made from the wax of foul-brood comb." On the face of things this appears to be a pretty serious state of affairs; but, happily, the facts come to our rescue, and prove that there is no cause for alarm.

We have melted the worst kind of diseased combs in our large heating-tank, made foundation, and put it in our own yard, but no trouble ever came. And there is not wanting testimony from other experimenters to prove this. But if Mr. Corneil's theory be true, would not foul brood have been universally spread all over the land with the advent of comb foundation, years ago?

Now, friend Corneil, we do not wish to dispute you point blank, so we will explain why the disease will not propagate with foundation. All our wax is melted by steam, in a large vat holding over a ton. This vat is inclosed in another, and is therefore surrounded by water. We have just been down, and found that the temperature of this surrounding water was 200 degrees. After the wax in the inner vat is melted, this temperature is allowed to go down to about 180. We aim to keep the wax itself in the melting-vat at about 170 degrees, and this temperature is maintained for days. The supply of wax is kept up by putting in cakes at a time, and it is dipped out as fast as we want it. As Mr. Corneil himself admits, a long-continued high temperature is equivalent to a much higher temperature for a few minutes; and not only the microbes but the spores themselves have got to succumb. A few hours of 170 degrees, we know from long experience, will kill all sorts of germ life. While the wax in the *melting-vat* is kept at 170, that in the dipping-tank is kept very near the congealing-point, 140, sometimes as low as 130. But before it has

arrived at the dipping-tank, it has long ago been thoroughly disinfected by the long-continued heat of 170 degrees. The Dadants have a similar melting-arrangement, and we feel sure that their foundation is perfectly free from any live germs. Perhaps we should remark further, that the wax melted in a solar extractor might not be disinfected, and it might be a wise precaution to remelt all such wax that has come from diseased colonies. But as there are very few apiaries indeed in the United States that have foul brood, no one need have any fear about the solar wax-extractor. It will *probably* kill the germs, but *may* not.

WHAT WE USE IS THE BEST.

WE like to think that the things *we* use are the best. It is not comfortable to think that somebody else is using devices or implements vastly better than our own. We use and recommend the Victor Spring-fork Safety bicycle. *We* think it is the best of all machines of that description. But it may be it is because we own one, and do not like to think the other fellow has a better one. Those of us who have been using loose frames may feel a little uneasy in the thought that fixed frames may one day be *the* frame. It would be very expensive to change, and so we like to persuade ourselves that what we use is just as good, and a little better. Be that as it may, it is well we do not change at every breath of wind.

CLOSED-END FRAMES, AND CHANGING OVER WHOLE APIARIES.

Now that the advantages of fixed frames are being set forth, do not let any bee-keeper owning 100 colonies on loose frames be foolish enough to change over his whole apiary to that style of frame. It has been demonstrated over and over again, that bees will make honey for their owners, in loose frames and in fixed frames; and the frame we should use is the one that affords the most convenience and accommodation. The frame that the apiarist can manipulate the easiest and the most rapidly, will, of course, make a little more money for him, because less labor is required. We have mentioned this two or three times already; but for the sake of some who are too enthusiastic, or inclined to be hasty, we think it will bear repeating again.

WHAT IS THE MATTER WITH OUR PATENT OFFICE?

THE other day an attorney sent us drawings and specifications of a patent that had just been issued to his client, on a bee-keeping appliance. Just out of curiosity we thought we would look the matter up, as we were sure it was old. We discovered that there were two other patents on the same thing, and the dates of the three patents are not more than a month apart, in the *same year*.

Somebody is going to lose money if one of the trio "goes to the courts." Now, this is not one instance, but one out of many that have come to our knowledge; and if any of our readers wish to know what the three patents are on we can inform them by letter; for, to make the thing public here, might make something of an uproar in camp. E. R. R.

LOOKING OVER BACK VOLUMES OF BEE-JOURNALS; A HINT TO WOULD-BE INVENTORS.

IT is real fun to look back through the old volumes. Problems that now seem to be quite fully solved, were, years ago, discussed, and seemed to be in a maze of mystery. Verily the world is moving, in spite of the fact that sometimes we do not seem to arrive at the solution of many old problems. It is interesting to see how the Italians were opposed. By some they were accounted as almost worthless. Foundation was another thing that had to fight its way inch by inch, until it is now regarded as one of the indispensables. Even the honey-extractor was called a "honey-slinging machine," and was regarded as worthless. A glance through the old volumes shows us that what we regard nowadays as entirely new was invented, described, illustrated, praised, and condemned, years and years ago. When our editors declare a thing to be old, it almost gives offense. Those of us who aspire to be inventors, and to be the originators of something new, should first purchase a set of old bee-journals and look them over, and see what has been invented. A mere skimming will not answer. We must scan page by page and paragraph by paragraph.

SILVER-PLATING OUTFITS; MORE ABOUT THE LAKESIDE ELECTRIC CO., ENGLEWOOD, ILL.

SOME of the friends thought I was a little hasty in pronouncing this whole business a fraud and a swindle from beginning to end. When I put in the caution on page 240, March 15, I felt satisfied that the whole thing emanated from J. M. Bain, Zanesville, O., as it had so plainly on the face of it the ear-marks of his plan of swindling. Just as we go to press we are informed that Postmaster-General Wanamaker has forbidden any mails to be delivered to W. H. Griffith & Co., Zanesville Chemical Co., Bain & Co., and J. M. Bain. All letters addressed to any of the above are to be returned to the sender, with the word "Fraudulent" stamped across the envelope. In one single day over $800 was paid out to Bain. The Englewood, Ill., institution is only a branch of the same concern. Bain has started out with so many addresses and so many different places, that one needs to look carefully before sending him money. As the U. S. courts are after him, his swindling is probably nearly if not quite at an end.

PRICE LISTS RECEIVED.

J. M. Young, Plattsmouth, Neb.
W. H. Bright, Mazeppa, Minn.
A. G. Hill, Kendallville, Ind.
W. H. Norton, Skowhegan, Me.
J. M. Kinzie, Rochester, Mich.
J. H. M. Cook, 78 Barclay St., New York.
W. J. Valentine, Hagerstown, Md.
N. D. West, Middleburgh, N. Y., cell-protectors.
The following were printed here:
Leininger Bros., Fort Jennings, O.
S. R. Holbert, Monangah, W. Va.

CONVENTION NOTICES.

The Central Michigan Bee-keepers' Association will meet at Pioneer Room, Capitol, Wed., May 6, 1891. All are invited.
W. A. BARNES, Sec., Lansing.

The Bee-keepers' Association and Fair will be open May 6. Open to all.
H. SMITH, Sec'y.
Ionia, Mich.

SPECIAL NOTICES.

THE HONEY-BEE.

The price of the above work by Thos. Wm. Cowan, mentioned elsewhere, will be $1.00, instead of 75 cts. as formerly announced.

FIGWORT, OR SIMPSON HONEY-PLANT SEED WANTED.

If any of you have any, even a little pinch, we should be glad to get it, as we are not able to furnish even the five-cent packages.

CREAM SECTIONS.

We still have quite a stock of No. 1 cream sections. They are all either 1⅞ or 1⅝ inches wide. The price is $3. 0 per 1000; $5.50 for 2000; $7.50 for 3000. Our new lumber is almost ready to cut up into sections; and, with the help of our dry-kilns, we are turning out first-class sections in sufficient numbers for all demands.

MAPLE SUGAR AND SYRUP.

We now have a good stock of maple sugar that we can furnish promptly. We grade it the same as in former years, and offer it 1 ct. below former prices, as follows: 10 cts. per lb. for No. 1; 9 cts. for No. 2; 8 cts. for No. 3, and 7 cts. for No. 4; ½ ct. less in 50-lb. lots; 1 ct. less in barrel lots of 300 lbs. The greater part of our stock comes in the two middle grades, Nos. 2 and 3. We have also a good stock of syrup in 1-gallon cans, at $1.10 per gallon; or in 10-gallon lots at $1.00.

COMB FOUNDATION AND BEESWAX ADVANCED.

Owing to the scarcity of wax, the price is gradually going up. Very soon it will be hard to get all we want for foundation. We will pay, for good average wax, delivered here, 28 cts. in cash or 30 cts. in trade, which is an advance of 3 cts. per lb. over our last quotation. As you will see in an advertisement on another page, we, as well as the Dadants, advance comb foundation 3 cts. a pound, both wholesale and retail. This advance is made necessary by the increased cost of wax, and takes effect at once.

VEGETABLE-PLANTS FOR APRIL 15.

We are happy to say that we can furnish almost any thing wanted in the line of vegetable and strawberry plants that are fit to go out in our locality. We have tomatoes, if anybody wants them; but without protection they can hardly be put out before May 1, with us. The same may be said of sweet-potato and pepper plants. We have an unusually handsome lot of Henderson's Early Summer cabbages. Basswood-trees we are sold out of, except the one-foot and under. Tulip-trees we have a very fine stock of, from five to ten feet. These are not only a most beautiful tree for ornament, but the large bell-shaped flowers furnish, perhaps, more honey during good seasons, to each blossom, than any other plant that grows. For prices and particulars, see our seed catalogue, which is ready to mail on application.

SECOND-HAND FOUNDATION-MILLS.

We still have on hand to dispose of, the following second-hand mills:

One six-inch, made some years ago, and in fair condition; worth $6.00.

Another 6-inch, a little better than the above; worth $9.00.

One 6-inch mill that we have used for making extra-thin foundation, and that will still make foundation about 12 feet to the pound; worth $12. This latter makes foundation just as good for practical use as a new mill, although it does not look quite as well, owing to little imperfections caused by small hard particles going through with the wax.

One 12-inch mill, hexagonal cell, that will make light brood foundation, or a fair grade of surplus; worth $18.

One 12-inch Dunham mill, which makes a good grade of heavy brood foundation; worth $18.

QUINBY SMOKERS.

You will find, on another page, an advertisement of Quinby's improved smoker, furnished by W. E. Clark. These smokers have considerable merit, and we have decided to handle them, and offer them at the following prices:

NAME & DESCRIPTION.	Size of Barrel.	Mail Each.	By Fgt. or Express. Each.	½ doz	1 doz
Large Quinby double-blast..	3½ in.	$2 00	$1 75	$7 00	$13 00
" " single-blast	3½ "	1 75	1 50	6 50	12 00
Extra " double-blast..	2¼ "	1 50	1 25	5 30	10 00
Hinge-noz. Quinby "	2¼ "	1 75	1 50	6 00	11 00
Plain Quinby "	2 "	1 25	1 00	4 50	8 50
Any of the last three, with single blast, deduct.. ...		15	15	50	1 00

These smokers are made with either hot or cold blast tube from the bellows, or with both. The extra expense of both is so little that we greatly prefer smokers with both tubes. By means of a slide it can be instantly changed from hot to cold blast. We used one of these smokers in our apiary several years ago, and liked it very much. They are very nicely made; and although they may not have as wide a reputation as Bingham's, we consider them just as good.

FORSTNER' AUGER BIT.

The ordinary bits have a spur so that it is impossible to do satisfactory work in making Benton cages, or any other cages similarly constructed. In the above bit you have something without a spur, and that bores a very smooth hole. With it you can bore a half-circle, or make many ornamentations in wood. If you wish to bore a hole overlapping one already made, this will do it to perfection, without running into the old hole as an ordinary bit does. We can furnish them postpaid at the following prices:

Size:	¼	5/16	⅜	7/16	½	9/16	⅝	11/16	¾	13/16	⅞	15/16	1	1⅛	1¼	1⅜	1½
Each,	.50	60	45	55	55	68	68	80	80	92	92	1.00	1.00	1.05	1.15	1.25	

The ½ size is the one we use for boring Benton cages.

LADIES' FINE SHOES.

Price $2.17 Postpaid.

Genuine Kid, Soft Soles, Perfect Fitting, Stylish, Comfortable, and made to wear. Try them. You will be pleased. Sizes 1 to 7; widths, C, D, E, EE. What size do you wear? Is your foot broad or narrow? Do you want a broad or narrow toe shoe? Sure fit, if you answer these questions.

I SELL GOOD SHOES.
NO CHEAP STUFF.

Send P. O. order, registered letter, or N. Y. draft.

C. L. GRIESINGER, MEDINA, O.

Reference—Gleanings. 8-9 10d.

☞In responding to this advertisement mention GLEANINGS.

WESTERN HIVE FACTORY.

Before writing East send for our 1891 catalogue of

HIVES, FRAMES, SECTIONS, ETC.

All goods at eastern prices, and of the very best workmanship.

NASH & SIBREE,
NASHVILLE, - - BENTON CO., OR.

tfdb mention this paper.

FOR SALE!

50 colonies of Italian and hybrid bees, by the pound or colony. For particulars address

C. A. KEELER, Carlinville, Ill.

8 9 10d Please mention GLEANINGS.

THE RECORD BROKEN,

And the race is won by the Albinos, which outstripped even the Italians in gentleness, beauty, honey-gathering, and the prolificness of queens. This race of bees was brought about by the reproduction of an Italian sport, and greatest care has been taken to get them pure, and the result is a race of bees that ranks first in the bee world. Try one of these queens. Descriptive catalogue free. 8tfdb

A. L. KILDOW, SHEFFIELD, ILL.

☞In responding to this advertisement mention GLEANINGS.

FOR SALE. ITALIAN BEES AND QUEENS.

Price list free. Address 8d

D. E. JACOBS, LONGLEY, OHIO.

FOR SALE. 10 colonies of Italian bees. Bargain. 8-9d REV. R. W. LEWIS, Ft. Worth, Tex.

Wants or Exchange Department.

WANTED.—To correspond with parties having potatoes, onions, apples, and honey for sale. Prompt attention given to correspondence. Consignments solicited. Prompt returns made. 19tfdb
EARLE CLICKENGER, 121 So. 4th St., Columbus, O.

WANTED.—To exchange pure Brown Leghorn eggs for tested Italian queens. GEER BROS.,
5-tfdb St. Marys, Mo.

WANTED.—To correspond with parties who wish to improve their poultry. Fair dealing.
5-tfdb D. F. LASHIER, Hooper, Broome Co., N.Y.

WANTED.—To exchange fruit trees and plants now, bees and queens in May and June, honey from crop of '91, for bee hives and fixtures *in the flat.*
Address JOHN W. MARTIN,
6tfdb Greenwood Depot, Alb. Co , Va.

WANTED.—Pure Italian queens, sections, nursery stock, or offers, for pure P. Rock eggs or Quimby hive-corner clasps. L. C. AXTELL, Roseville, Ill.
6tfdb

WANTED.—To exchange prize-winning Brown Leghorn eggs—$1 per 15—for flowers, seed, or offers. 7-8d MRS. ELLA LAWS, Lavaca, Ark.

WANTED.—To exchange pure Italian bees, queens, or hives, for a gentle horse—one that ladies can drive. Send for price list. MRS. OLIVER COLE,
7tfdb Sherburne, Chenango Co., N. Y.

WANTED.—To exchange comb foundation for beeswax.
7-10db J. S. BROOKS, Silverton, Marion Co., Ore.

WANTED.—Man who understands the care of bees in movable frames. A few swarms on private place. $20 and board per month. References required. JAS. HORROCKES,
7-8 Hyde Park, Dutchess Co., N. Y.

WANTED.—To exchange Buckeye incubator, 150-egg capacity, for Dovetailed hives, foundation, or sections. H. WINGERT, Loveland, O.

WANTED.—Printing, safety bicycle, Italian queens now, eggs, song birds, and strawberry-plants, for printing outfit, microscope, books, mineral cabinet, or bees in June. JNO. C. CAPEHART,
St. Albans, W. Va.

WANTED.—A man or woman to take charge of an apiary of 60 colonies. 8d
ABRAM GAMPP, East Otto, Cattaraugus Co., N. Y.

WANTED.—To exchange brooder, corn-sheller, S. C. W. Leghorns, B. Minorcas, for road-cart, apiarian supplies, Italian bees, or offers. 8tfdb
ELIZABETH DIMICK, Burns, Steuben Co., N. Y.

WANTED—To exchange one Hall typewriter, almost as good as new, for apiarian supplies, queens, bicycle, or tricycle. Cost of writer was $40 when new. Will give a bargain. Also have 50 bu. of Japanese buckwheat for sale. 8tfdb.
F. W. SCHAFER, Eddyville, Ia.

WANTED.—Bee-keeper, experienced, unmarried. Wanted to take charge of a 200-colony apiary near Denver. State salary desired. Send testimonials. P. O. Box 2784, Denver, Col.

WANTED.—For sale, or exchange for smaller farm, 100 acres of choice fruit, hay, and grain land, all under good cultivation, well seeded and well fenced, 3½ miles north of Cass City, on State Road, in a thickly settled neighborhood of mostly Canadians and Germans; ½ mile from new M. E. church; one mile from school. Five acres of young, bearing, grafted, apple, pear, plum, and cherry trees; 30 Concord grapevines, plenty of currants, gooseberries, etc. A dwelling-house 18x26, with an addition 16x24; 1 barn, 32x70; also 1 barn, 24x32; sheep-shed, 12x32; 1 work-shop, 13x16; four good wells; 40 colonies bees in Simp. hives; team, stock, and farming tools. Price of land, $4000. Reason for wanting to sell, wife's health is poor. For further particulars address WM. MARTIN, 7-10db
Cass City, Tuscola Co., Mich.

WANTED.—For my farm in mountains of Virginia, a married man who understands bees, poultry, and fruit. Permanent place for right person. References required. GEO. MCCARTHY, Raleigh, N. C.

WANTED.—Man to work in apiary. Experienced hand preferred. Address, stating experience and wages expected. CHARLES ADAMS,
8d Greeley, Colo.

WANTED.—To exchange a quantity of Downing strawberry-plants, or fine warranted Italian queens in June or July, for a thoroughbred Lt. Brahma cockerel, nursery stock, or bee-keepers' supplies. Correspondence solicited. FRANK MOSS,
8d Hobart, N. Y.

WANTED.—To exchange or sell cheap a Given foundation press with dipping-tank and boards complete; cost $55. Good as new; $35 cash will take it. What have you to exchange?
8tfdb FRANK A. EATON, Bluffton, O.

WANTED.—To exchange 2-story tin-top S. hives, fitted with 20 full combs, for untested queens from imported mother. M. FRANK TABER,
8d Salem, O.

WANTED.—Bees, strong Italian colonies on L. frames; state number of frames of brood to each colony. Also Italian and Carniolan queens; lowest cash price. Safe delivery must be guaranteed. Correspondence solicited at once.
H. GREENLAND, Orillia, Ont., Can.

WANTED.—A man capable of taking charge of 125 colonies of bees; either on shares or for wages. Address MRS. M. C. GENTRY, Phalia, Miss.

WANTED.—To exchange English Dorkings ($5 a trio) or eggs ($1 per 13) for pure Italian bees or queens, or offers. C. W. SMITH,
8-9d Lock Box 232, Aurora, Ill.

BEST ON EARTH

ELEVEN YEARS WITHOUT A PARALLEL, AND THE STANDARD IN EVERY CIVILIZED COUNTRY.

Bingham & Hetherington

Patent Uncapping-Knife,

Standard Size.

Bingham's Patent Smokers,

Six Sizes and Prices.

Doctor Smoker,	3½ in.,	postpaid	...	$2.00
Conqueror "	3 "	"	...	1.75
Large "	2½ "	"	...	1.50
Extra (wide shield)	2 "	"	...	1.25
Plain (narrow ")	2 "	"	...	1 00
Little Wonder,	1¾ "	"	...	65
Uncapping Knife.....				1 15

Sent promptly on receipt of price. To sell again, send for dozen and half-dozen rates.

Milledgeville, Ill., March 8, 1890.
SIRS:—Smokers received to-day, and count correctly. Am ready for orders. If others feel as I do your trade will boom. Truly, F. A. SNELL.

Vermillion, S. Dak., Feb. 17, 1890.
SIRS:—I consider your smokers the best made for any purpose. I have had 15 years' experience with 300 or 400 swarms of bees, and know whereof I speak.
Very truly, R. A. MORGAN.

Sarahsville, Ohio, March 12, 1890.
SIRS:—The smoker I have has done good service since 1883. Yours truly, DANIEL BROTHERS.

Send for descriptive circular and testimonials to
ltfdb BINGHAM & HETHERINGTON, Abronia, Mich.
☞In responding to this advertisement mention GLEANINGS

BRONZE TURKEY EGGS, $3.00 per 13. Pekin Duck eggs, $1.00 per 13. Pure stock.
7-d J. C. PROVINS, Masontown, Pa.

AMERICAN BEE JOURNAL

32 pages—**$1.00** a year—Sample Free.

The oldest, largest and cheapest Weekly bee-paper

THOMAS G. NEWMAN & SON,

246 East Madison Street, - CHICAGO, ILL

☞In responding to this advertisement mention GLEANINGS.

MUSICAL INSTRUMENTS

MURRAY & HEISS

CLEVELAND OHIO.

SEND FOR CATALOGUE.

1-tfdb

☞In responding to this advertisement mention GLEANINGS.

Bee-Keepers' Supplies.

Hives, Honey-Cases, Sections, and Frames. We are the only concern in Southern California who make a

SPECIALTY OF BEE-KEEPERS' MATERIAL

Agents for the white basswood 1-lb. sections. Send for catalogue and price list.

OCEANSIDE MILL CO.,

1-12db **Oceanside, Cal.**

☞In responding to this advertisement mention GLEANINGS.

SEND TO E. J. SHAY,

Thornton, Taylor Co., W. Va., for illustrated catalogue of bee-keepers' supplies, both in the flat and set up. 7tfdb E. J. SHAY.

STOP! THINK! ACT!

Griffith's Italian queens will give you strong colonies, plenty of honey, and nice bees. 7-12db

Untested queens in May, $1.00.
" " in June, July, and Aug., 75c.
Tested " in May, $1.25.
" " in June, July, Aug., & Sept., $1.00.

All queens reared from best imported and choice home mothers. Safe arrival guaranteed. Address all orders to **B. C. GRIFFITH.** Griffith, N. C. Postoffice order on Charlotte, or reg. let. to Griffith.

Please mention this paper.

ATTENTION, CALIFORNIANS!

I have for sale 16,000 1-lb. V-groove one-piece white basswood sections, 1⅞ wide, made by A. I. Root. Price $5.00 per M, put on cars at King City, Monterey Co., Cal. For 5000 or more, write for special prices to C. K. ERCANBRACK, JUN.,

4tfdb Lonoak, Monterey Co., Cal.

☞In responding to this advertisement mention GLEANINGS.

L. C. ROOT APIARY FOR SALE.

A first-class opening for an energetic man. Nice home.

BUILT ESPECIALLY FOR BEE-KEEPING.

Nice garden, plenty of fruit, etc. Room for outapiaries. 7tfdb

J. C. HAINES, MOHAWK, N. Y.

☞In responding to this advertisement mention GLEANINGS.

FOR SALE!

100 colonies of bees, Italians and hybrids, in eight-frame, Langstroth, portico, movable hives. Price for Italian, $4.50; hybrids, $4.00 each. I guarantee safe delivery. 7-8-9d

CHRISTOPHER GRIMM, Jefferson, Wis.

FRIENDS, if you want three or four L. frame nuclei full of nice Italian bees, queen, and capped brood, or queens, that will give satisfaction, at reasonable prices, write to 7tfdb

W. A. SANDERS, Oak Bower, Hart Co., Ga.

LOOK HERE, FRIENDS.

If you want Black or Hybrid Bees from March 15 to May 15, at $1.00 per pound; Hybrid Queens, 50c, Black, 25c, as long as I have them, send to me. I guarantee safe arrival and satisfaction. Have shipped bees successfully for 10 years to the northern States and Canada. 6 9db

MRS. JENNIE ATCHLEY,

Box V., Farmersville, Tex.

☞In responding to this advertisement mention GLEANINGS.

PURE ∴ ITALIAN ∴ QUEENS.

TESTED, $1.50. *IMPORTED*
UNTESTED, $1.00. *MOTHER.*

MISSES S. & M. BARNES, PIKETON, OHIO.

Please mention GLEANINGS. 6-7-8 9 10 12d

JAPANESE BUCKWHEAT, ½ bu., 50c; bu., 90c; two ormore, 80c; sacks included.

7 8d W. B. COLLINS, Blackwater, Cooper Co. Mo.

Established 1878.

SMITH & SMITH,

Wholesale and Retail Manufacturers of

BEE-KEEPERS' SUPPLIES.

KENTON, OHIO.

Price List Free. 4tfdb *Mention Gleanings.*

DR. TINKER'S SPECIALTIES!

The Nonpareil Bee-hive and Winter case, White Poplar Sections, Wood-zinc Queen Excluders, and the finest and best Perforated Zinc now made.

Send for catalogue of prices, and inclose 25 cts. for the new book, **Bee keeping for Profit.**

Address **DR. G. L. TINKER,**

21tfdb **New Philadelphia, O.**

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ELLISON'S EARLY QUEENS AND BEES.

ALL ITALIANS.

1 Untested Queen, April, $1.00; May, $1.00.
3 " Queens, " 2.75; " 2.50.
1 Tested Queen, " 2.00; " 2.00.
3 " Queens, " 5.00; " 4.00.

Very best Select Tested for breeding, $3.00.
2-frame Nuclei, with any queen, $1.50 extra.
Safe arrival guaranteed. 7-8-9d

W. J. ELLISON, Catchall, Sumter Co., S. C.

☞In responding to this advertisement mention GLEANINGS.

FOR SALE.

Italian and hybrid bees in Dovetailed and new Heddon hives. Price $6 and $4 respectively. One reliable pit game cock, $3; two pair of steels, $4; one hot-water incubator, 50-egg capacity, $6; one-horse-power engine and boiler in good order, $25.

7-8d **J. T. FLETCHER, Clarion, Pa.**

Please mention this paper.

TAKE NOTICE.

Our New Factory is Now Open

To receive orders for **Bee-Hives, Frames** of all kinds, **Shipping-Crates, Sections, Honey-Cans, Comb Foundation,** and **Smokers.** Write for price list to

GREGORY BROS. & SON,

5-tfdb **Ottumwa, Wapello Co., Iowa.**

☞In responding to this advertisement mention GLEANINGS.

FOR SALE.

One double-drum, "Ledger Wood," hoisting-engine, cylinders 7x9 in. Used one month.

7-8d W. S. AMMON, Reading, Pa.

OUR NEW

OUTSIDE WINTER-CASE

FOR DOVETAILED HIVES

Is now ready. It is **LIGHT, STRONGLY MADE**, with **SOLID CORNERS**, gable roof, and is **PERFECTION**. It is especially designed for using on the regular **Dovetailed Hive**, and we guarantee that bees will winter safer with it than any other method.—Besides it is **VERY CHEAP**, and **no trouble** to use.

We have also just constructed a **THIN-WALLED HIVE**, same size inside as the 8-frame Dovetailed hive, and taking same inside furniture. This, in combination with the Winter-case, is the best hive for both summer and winter we have ever seen.—Full description and illustrations will appear in May number of **AMERICAN BEE-KEEPER**, and description and prices will be sent on application. It is the **CHEAPEST** hive made, and with the winter-case is the cheapest winter hive. Send for prices. Address

The W. T. Falconer Mfg. Co.

JAMESTOWN, N. Y.

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1878 **1891**

DADANT'S COMB FOUNDATION.

Half a Million Pounds Sold in Thirteen Years. Over $200,000 in Value.

It is kept for sale by Messrs. T. G. Newman & Son, Chicago, Ill.; C. F. Muth, Cincinnati, O.; Jas. Heddon, Dowagiac, Mich.; O. G. Collier, Fairbury, Neb.; G. L. Tinker, New Philadelphia, O.; E. Kretchmer, Red Oak, Ia.; P. L. Viallon, Bayou Goula, La.; Jos. Nysewander, Des Moines, Ia.; C. H. Green, Waukesha, Wis.; G. B. Lewis & Co., Watertown, Wis.; J. Mattoon, Atwater, O.; Oliver Foster, Mt. Vernon, Ia.; C. Hertel, Freeburg, Ill.; E. T. Abbott, St. Joseph, Mo.; **E. Lovett, San Diego, Cal.; E. L. Goold & Co., Brantford, Ont., Can.;** Page, Keith & Schmidt, New London, Wis.; J. Stauffer & Son, Nappanee, Ind.; Berlin Fruit-Box Co., Berlin Heights, O.; E. R. Newcomb, Pleasant Valley, N. Y.; L. Hanssen, Davenport, Ia.; C. Theilman, Theilmanton, Minn.; G. K. Hubbard, Fort Wayne, Ind.; T. H. Strickler, Solomon City, Kan.; E. C. Eaglesfield, Berlin, Wis.; Walter S. Pouder, Indianapolis, Ind.; Martin & Co., 1141 15th St., Denver, Col.; I. D. Lewis & Son, Hiawatha, Kan., and numerous other dealers.

It is **the best,** and guaranteed every inch equal to sample. All dealers who have tried it have increased their trade every year.

SAMPLES, CATALOGUE, FREE TO ALL. SEND YOUR ADDRESS.

1852 **1891**

LANGSTROTH ON THE HONEY-BEE. Revised.

Those who wish a book in which they will find, without difficulty, whatever information beginners desire, should send for this work. Its arrangement is such that any subject and all its references can be found very readily, by a system of indexing numbers. It is the most complete treatise in the English language.

——A FRENCH EDITION JUST PUBLISHED.——

HANDLING BEES (Price 8 cts.),

is a chapter of the Langstroth revised, and contains instructions to beginners on the handling and taming of bees.

Bee-veils of Best Imported Material. Samples FREE. Smokers, Honey Sections, Extractors, Tin Pails for Honey, etc. Instructions to Beginners with Circular, Free.

CHAS. DADANT & SON, Hamilton, Hancock Co., Ill.

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